

December 2019
Vol. 22, No. 8

GSCA Conference, Victoria, Vancouver, cont'd

Our coverage of the 2019 conference of the **Giant Screen Cinema Association** concludes with this report. The meeting was held in Victoria and Vancouver, BC, Canada, Sept. 10-13.

Theater operations survey

The co-chairs of the GSCA's Member Services committee, **Mary Jane Dodge** of **MacGillivray Freeman Films** and **Marlene Janetos**, formerly with the **Museum of Discovery and Science** in Fort Lauderdale, FL, reported on a survey they conducted last spring on theater operations.

After inviting nearly 100 current and lapses member theaters, they received responses from 52, of which 42 were in North America, five were in Europe, and the rest in the Asia/Pacific region. Fifty-two percent were flat screens, the remainder domes.

The majority of theaters — 59% — book between one and three new films per year, one-third show between four and six, and 8% run more than seven. Half of the respondents show Hollywood films, one-third of those as first-run.

Only 22% are showing the shorter 20-

minute versions now being offered by many distributors. (See article on this topic in the Summer 2019 issue.) Most theaters (70%) now offer concessions sales, generating an average of \$1.81 per person in documentary shows and \$4.06 during screenings of Hollywood features. Only small minorities currently offer priority seating or reserved seat sales.

Slightly more than half of the theaters offer alternative programming of some sort, including corporate presentations, rentals, film festivals, repertory films, concerts, and video gaming.

The survey compared the attendance and capture rates of theaters that show first-run Hollywood films with those that show no Hollywood features. Interestingly, the averages showed virtually no differences in either category. The average attendance of the ten theaters in the former group was 152,139, compared to 152,419 in the 39 non-Hollywood theaters, a difference of less than 1%. Overall institutional attendance was nearly as close, 510,464 vs. 546,684. Capture rates in the first group averaged 26% compared to 24% in the second.

LED displays

Paul Fraser of **Blaze Cineworks** moderated a session on direct-view LED displays that could take the place of projection systems in flat-screen and dome theaters in coming years. He pointed out that flat LED screens are already in use in a number of commercial movie theaters around the world, in sizes up to nearly 50 feet (15 meters). He added that just a short while ago he didn't expect to see dome LED systems available before 2025, but in the past year several companies have an-

(see *GSCA* on page 6)

Boosting Capture Rates and Theater Revenues

by Robert Griesmer

In 1988 I attended my first giant-screen industry conference in Chicago. I remember it well because we had just that summer opened the **Maritime Aquarium** in a renovated New England brick iron works building in Norwalk, CT, along with a flat-screen IMAX theater. By the time I arrived in Chicago we knew that our institutional attendance and IMAX capture rates were not going to match the projections that had been prepared by economic feasibility consultants to justify the \$30 million municipal bond issue that had financed the construction.

We would not be the last aquarium/science center to face this problem upon opening. Aquariums in Camden, NJ; Tampa, FL; and Denver, CO; would soon follow suit. None of them had an IMAX theater, but in those days IMAX was not the big international brand it is today, and theater success depended largely on local branding efforts. Until, as we all know, **Greg MacGillivray's** crew was on Mount Everest, and overnight the name IMAX began a journey of national and international recognition.

Stephen Low's *Beavers*, advertised as "The Biggest Dam Movie You Ever Saw," was the one and only new release at the 1988 conference. Good thing it was a hit! **Paul Fraser**, then overseeing **Imax Corporation's** circuit of owned and operated theaters, recently told me that at the time he and many others lamented the short supply of new films. Since we were running only one film at a time for six months (a typical programming practice),

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Farewell to NASM's Zeiss Planetarium

by David DeVorkin

Since the opening of the Smithsonian's **National Air and Space Museum** in Washington, DC, in 1976, our **Zeiss Model VIa** optical planetarium projector has brought the wonder of the night sky to countless visitors. The Zeiss company no longer services the over 40-year-old model, and to the end its stars were as sharp as ever, and its skies were as deep in their dramatic blackness. But its celestial motors became weary, so it has been retired in favor of an ever-improving digital projection system that offers many advantages to meet modern programming needs. The Albert Einstein Planetarium closed in October as our multi-year renovation progresses through the museum, but it will eventually reopen as a fully digital experience. Now that we are saying good-bye to its original projector, the question is, how did it get here?

A planetarium for DC

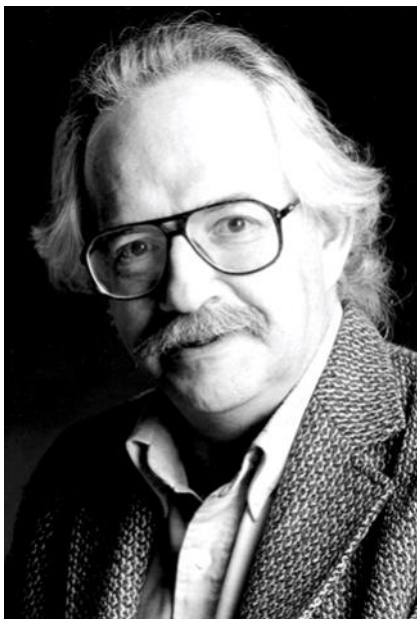
In the 1920s, the Zeiss Company of Jena, Germany, created a new and very immersive way to explore the night sky, using precision motorized optical projection against a large interior or domed screen. As part of its campaign to place these projectors in the world's capitals, Zeiss contacted the Smithsonian Institution in 1927, offering to help find the means to install one on the National Mall. The Smithsonian was unable to respond positively then, and reluctantly continued to resist other entreaties from the 1930s to the late 1950s. It simply had other priorities. Meanwhile other groups in the Washington area, ranging from a prominent restaurant owner to a group of educationally minded aerospace promoters, campaigned to establish a major planetarium in Washington.

In 1958, responding to efforts to revitalize the Southwest waterfront of the District of Columbia, the owners of the classic Hogate's Restaurant announced plans to build a large planetarium as a "magnet for tourists" that would also fill a long-felt need for such an educational facility. The planetarium would complement their restaurant, and its owners, Joseph K. and Watson B. Rulon, indicated

that they would eventually propose the planetarium as a gift to the Smithsonian to expand its presence on the "South Mall."

Although nothing came of this gesture, a loose consortium of civilians soon revived the idea in the early 1960s, orchestrated by Herman S. Weinstein, a local educational entrepreneur. Weinstein raised the idea with Father Francis Heyden, the revered astronomer-educator at Georgetown University, and, bolstered by the Soviet satellite Sputnik, spearheaded a blue-ribbon campaign starting in 1961 that included luminaries such as nuclear physicist Edward Teller, Harvard astronomer Donald Menzel, Caltech aerodynamicist Theodore van Karman, space scientist S. Fred Singer, famed aviator Lt. Gen. James Doolittle, and aviation pioneer Jacqueline Cochran.

Their stated goal was to build the largest planetarium and space center in the world in an 85-foot domed chamber. About two feet larger than the Soviet Union's Moscow Planetarium dome, the "Washington Planetarium and Space Center" would rectify the embarrassment of Washington being the only major world capital without a planetarium. They developed all sorts of plans, including a sweeping flying-saucer-shaped structure on Daingerfield Island, south of National Airport; an Air Force Association-sponsored planetarium across the Potomac from the Lincoln Memorial; a



David DeVorkin

planetarium in East Potomac Park; and even an entertainment and education complex on 12th Street SW.

In 1964, when he became Smithsonian Secretary, S. Dillon Ripley accepted an invitation to join the Washington Planetarium and Space Center's Executive Board, so he could keep in touch with the slow but persistent efforts of the planetarium initiative. In early 1965, when the prospect of Air Force funding seemed strong through the agency of Cochran and the Air Force Association, Ripley and Melvin Payne of the **National Geographic Society** did what they could to encourage the liaison. Ripley delegated staff to monitor progress of the planetarium group. Soon there was a name change when the

D. C. Restaurateurs Propose Gift Of Planetarium to Smithsonian

By RICHARD FRYKLUND
Star Staff Writer

The proposed million-dollar planetarium in southwest Washington will someday be offered as a gift to the Smithsonian Institution.

atson B. Rulon, Jr., who, with his twin brother, Joseph Rulon, are planning the planetarium, said yesterday that when the project is completed it will be given to the Smithsonian.

The Rulons, managers of Hocate's restaurant, said they had raised \$239,000 for the project.

The planetarium would be a 100-foot-diameter dome with a 10-foot-thick shell.

The dome would be made of a material called "domecrete" which is a mixture of concrete and glass.

The planetarium would be built on a 10-acre site in the Southwest Washington area.

The planetarium would be built on a 10-acre site in the Southwest Washington area.



PROPOSED FOR THE NEW SOUTHWEST—This is a model of the million-dollar planetarium proposed as a gift to the Smithsonian Institution by the Rulons, managers of Hocate's restaurant.

Article in the Dec. 28, 1958, edition of the Sunday Star about the proposed waterfront planetarium offered to the Smithsonian. Proquest Historical Newspapers

Executive Board agreed to call it the "National Air Force Planetarium and Space Center" with the understanding that it would be a true national planetarium in the broadest possible sense, more than an Air Force-centered facility.

The Air Force remained the Center's best hope for quite some time. Despite continued grassroots attention, despite Jackie Cochrane's marshalling of Camp Fire Girls to raise funds, despite her more hopeful efforts to secure Bob Hope for a television special to announce the fund drive for the planetarium, despite kind words from Vice President Lyndon Johnson (he declined to be on the Board), and despite the good wishes of official Washington, fund raising remained way below expectations.

Negotiations between the Board and the Air Force Association broke down finally in late 1965, and by January 1966 a new Educational Advisory Committee emerged that included university and college presidents from all major institutions throughout the Washington area. Ripley and Payne continued to watch the deliberations carefully. Ripley asked his chief assistant, James Bradley, to attend the educational meetings, and to take with him either the curator of meteoritics from the National Museum of Natural History or even an astronomer from the Smithsonian's Astrophysical Observatory in Cambridge, MA, to provide gravitas.

At the same time, as Ripley keenly

known, long-term plans for a National Air Museum had taken on new life in response to efforts by Senators Barry Goldwater and Clayborn Pell, and "Space" was added to its name. As a result, the Space Center's Board started thinking about giving over the planetarium to the Smithsonian. In September 1967 they formally approached the Smithsonian and Ripley said he would entertain their proposal as long as the Space Center incorporated the themes of the National Air and Space Museum and the present Board would be willing to help the Smithsonian "along the path toward Congressional fiscal approval, just as I believe our cultivating the giants of the aerospace world would."

Thus the two Space Age initiatives, the National Air and Space Museum and a national planetarium, came together. Each needed the other. But there were still numerous competing design alternatives. At one point, consultants were engaged who proposed that the dome of the Smithsonian's Natural History Museum be filled with a planetarium. But with a true National Air and Space Museum now promised, a planetarium became a critical part of the planning.

In late 1969, however, the original Air and Space design authorized in 1966 was 20 percent over budget and so the entire building was re-

designed. It also had to be re-sold, both to Congress and to the public. This led Ripley's advisors to emphasize once again that the redesign had to include a planetarium to put it "in a good position to begin a public campaign to solicit support." No major redesign was required, just an enclosed rectangular space, and no extra funding.

Indeed, by the 1960s, the canonical image of a visible dome dominating a planetarium facility had weakened in favor of the considerably more versatile and economical idea of filling a pre-existing space with a suspended, acoustically transparent dome. Once the architects familiarized themselves with new developments in planetarium construction, mainly that those large acoustically transparent domes could be suspended inside existing rectangular spaces, planners started debating what the best design was for the overall facility.

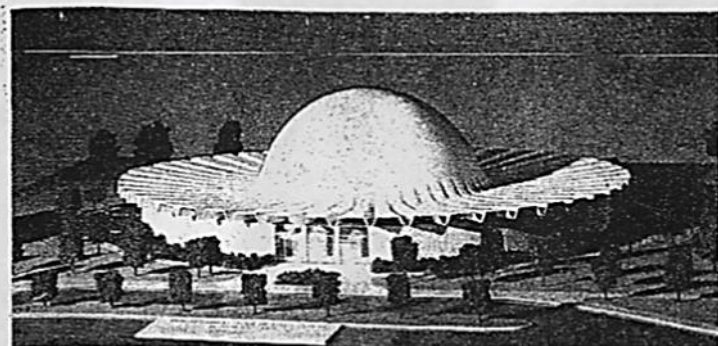
Stars or aero & space escapades?

In 1971, the new Air and Space director, Apollo 11 astronaut **Michael Collins**, keenly knew that Ripley was strongly in favor of a planetarium-type facility that would be "of a special design for an optical instrument to illustrate the sensation of being in space rather than on the surface of the Earth." Collins forcefully pushed for what he variously called a

(see **ZEISS** on page 14)

Big New Planetarium Seen for River Area

The Washington Post, Times Herald (1959-1973); May 11, 1962; ProQuest Historical Newspapers The Washington Post (187 pg. B9)



Architect's sketch by Robert Calhoun Smith, AIA, for the proposed Washington Planetarium and Space Center, which a nonprofit group hopes to build on Dangerfield Island, near National Airport.



Big New Planetarium

Article in the Washington Post on May 11, 1962, about one of several proposals for a new "Washington Planetarium and Space Center" on Dangerfield Island.

THE BIZ

NEWS

New D3D theater in Toledo

Imagination Station in Toledo, OH, is building a 3D digital theater as part of a \$10 million expansion that will also include a new concessions area and gift shop. Construction of the 8,200-square-foot (760-square-meter) addition began in June, and is set to be completed in June of 2020.

D3D Cinema will equip the 280-seat theater with dual **Barco** laser projectors with Schneider lenses, a Barco Alchemy server, a **Strong/MDI** screen, and a **QSC** 5.1-channel audio system. The projection system will be capable of displaying alternative content, and accessibility will be provided by closed-captioning and assistive-audio systems. An Ushio/Kooptech glasses-cleaning machine will also be installed.

The new theater's naming sponsor is Cleveland, OH-based **KeyBank**.

Although the theater will not meet the **Giant Screen Cinema Association's** definition of a giant screen (at least 70 feet wide), the facility is one of only a handful of large digital theaters to open in North American museums or science centers in the last decade. The worldwide count of institutional GS theaters has been in a slow decline since reaching a peak of 203 in 2005. The current total is 183.

Opening in 1997, Imagination Station was originally known as the Center of Science and Industry (COSI), created as a

partnership between the city of Toledo and **COSI Columbus**, which had been founded in 1964. Although **COSI Toledo** won the prestigious **National Award for Museum and Library Service** in 2005, by 2006 both COSIs were facing financial difficulties and opted to legally separate. After voters declined a levy to fund the center, **COSI Toledo** closed on Dec. 31, 2007.

Less than a year later, the electorate reversed that decision, approving a funding measure that allowed it to reopen in the fall of 2009 under the new name: **Imagination Station**.

D3D to convert NEAQ to laser

Early next year the **New England Aquarium** in Boston, MA, will replace the 18-year-old **IMAX GT3D** film projector in its **Simons IMAX Theatre** with a 3D laser system to be provided by **D3D Cinema**. On Jan. 1 the theater will close while the

Barco 4K dual-projector system with Schneider lenses, a Barco Alchemy server, and a **QSC** 5.1-channel sound system are installed. The new **Strong/MDI, Inc.**, screen will be 43x80 feet (13x24 meters), 33% shorter than the current screen, reflecting the change in aspect



The Simons IMAX Theatre in Boston will be converted to digital laser by D3D.

ratio from the 15/70 frame's 1.43: to the digital 1.9 ratio.

Included in the package is a system for programming alternative content from virtually any A/V source, closed-captioning and assistive-audio systems, and an Ushio/Kooptech glasses-cleaning machine. The seats and carpets will also be replaced as part of the renovation, and a new 1,800-square-foot (170-square-meter) stage will be added.

The theater will reopen on Feb. 15.

The 392-seat theater opened in December 2001 in a distinctive metal-clad building adjacent to the aquarium on Boston's Central Wharf.

GSCA names officers, chairs

The board of the **Giant Screen Cinema Association** has elected its new officers and committee chairs for the two-year term starting Jan. 1, 2020. They officers are:

Chair: **Alan Nursall**, **TELUS World of Science-Edmonton**

Vice Chair: **Joanie Philipp**, **Discovery Place**

Secretary: **Christian Fry**, **CVF Productions**

Treasurer: **Michael Daut**, **Michael Daut Productions**

The association's Executive Committee comprises these four as well as **Taran Davies**, **Cosmic Picture**; **Patricia Keighley**, **Imax Corporation**; and **Tina Ratterman**,



Artist's rendition of the KeyBank Discovery Theater opening in Toledo in June.

NEWS

BIG and Digital. The new committee chairs and co-chairs are:

Governance: Patricia Keighley, Imax Corporation

Event Planning: **Julie LaRoche**, **Montreal Science Centre** and **Patty Collins**, **MacGillivray Freeman Films**

Industry Development: Taran Davies, Cosmic Picture and **Diane Carlson**, **Giant Screen Cinema Consulting**

Member Services: **Marlene Janetos** and **Mary Jane Dodge**, MacGillivray Freeman Films

Innovations (formerly Technical): Michael Daut, Michael Daut Productions and Christian Fry, CVF Productions)

Imax China favors local films

Imax China plans to shift the programming of IMAX theaters in the country toward locally produced films, and lessen the emphasis on Hollywood fare, according to press reports. In 2019, two Chinese-language films were among the top five best performers at IMAX theaters. The company reportedly intends to make Chinese films half of its slate.

In 2020, China is expected to surpass the U.S. as the world's largest market for movies. Ticket sales in the country grew by 30% this year, compare to 2.9% for the business as a whole, leading producers in Hollywood and China to jockey for a share. In 2019, Hollywood's share dropped to 30%, the lowest since 2011, according to a Maoyan Entertainment. Imax China has taken in a record \$108 million so far in 2019.

However, Imax China is facing competition for its core theater-building business from within and without the country. Government-backed **China Film Digital Giant Screen** has said it intends to become the largest premium cinema chain in the country, and U.S.-based **Dolby Laboratories** is also expanding its footprint of Dolby Cinema theaters in China.

As of the end of September, there were 681 IMAX theaters in China, compared to over 400 in the U.S.

Joe DeAmicis to retire

Joe DeAmicis will retire from his position as vice president of marketing at the **California Science Center** in Los Angeles as of Jan. 30, 2020. He joined the center, then known as the California Museum of Science and Industry, in November 1992 as director of the original IMAX 2D theater, which had opened in 1984.

In 1998 the museum was renovated and renamed, and a new IMAX 3D theater was opened. DeAmicis was promoted to VP of Marketing, a position he has held since.

Regarding his accomplishments at CSC, he says, "Although I can't say we were the first institution to marry films and traveling exhibitions, I think we were one of the early pioneers to fully exploit this marketing connection, starting with the "Titanic" exhibit and Imax's *Titanica*. The combination drove us to new box office highs and we continued down that path with "Body Worlds" and the BBC's *The Human Body*, the "Mummies" exhibit with **Giant Screen Films'** *Mummies 3D* and many others over the years." (See article about "Dogs! A Science Tale" and Superpower Dogs in the April 2019 issue.)

Among his most memorable moments was "sitting directly behind **Dustin Hoffman** and **Sting** at a private screening of *Everest*. They were seated next to each other and I could hear their audible gasps and the looks they gave each other while watching the drama in the film unfold."

DeAmicis tells *LFX* that he has been mentoring his successor at CSC, **Gina Lee**, and has "effectively passed the operational baton to her." He says he will miss his colleagues and friends in the GS business, some of whom he has known since his first days, adding that he "may still pop up [at industry meetings] from time to time, because, after all, someone has got to get the dance party started!"



Joe DeAmicis

PERSONNEL

Ritchie is CEO of MOS Boston

The **Museum of Science, Boston**, has named **Tim Ritchie** as its president, effective Feb. 3, 2020. He is replacing **Ioannis Miaoulis**, who stepped down in December 2018 after heading the 180-year-old institution for 16 years. Miaoulis was replaced on an interim basis by COO **Wayne Bouchard**.



Tim Ritchie

Ritchie comes to the museum from the **Tech Interactive** in San Jose, CA, where he has served as president and CEO since 2011. During his tenure he raised more than \$100 million in donations and the museum won the National Medal for Museum and Library Service in 2015. Before the Tech, he headed the **McWane Science Center** in Birmingham, AL for seven years.

Ritchie holds a bachelor's degree from Davidson College in North Carolina, a J.D. from Duke University School of Law, and a master's in Public Administration from the Harvard Kennedy School.

Tan named CEO of Imax China

Edwin Tan has been appointed as CEO of **Imax China**, effective Dec. 9, replacing **Jiande Chen**, who will become vice chairman of the **Imax Corporation** subsidiary. Tan comes to Imax China from Messe Muenchen, a German operator of exhibition space, where he served as CEO of China operations since 2017. Before that he was president of **Wanda Studios** for one year. From 2007 to 2016 he was COO for Reed Exhibitions Greater China.



Edwin Tan

Tan holds a bachelor's degree in economics from Murdoch University in Australia and an MBA from the University of Hull in the U.K.

GSCA 2019 Conference in Victoria and Vancouver, BC



The LED Display session. L to r: Moderator Paul Fraser, David Richards, MiT; Nick Conti, Samsung; Kirk Johnson, E&S.

(from **GSCA** on page 1)

nounced and demonstrated them. (See article in the *Summer 2019* issue.) He predicted that the technology will be a “major disruption and a fundamental change to the technology, the business, and the look of watching movies of all types,” including giant screens.

Representatives of three companies involved in LED screens each made brief presentations outlining various aspects of these systems, including their capabilities, specifications, economics, and operations.

David Richards is senior VP of engineering for **Moving Image Technologies**, which has installed several of the Samsung LED displays now operating in North American cinemas. Those screens are composed of modules about 3x2 feet (1x0.66 meters), each of which contains an array of a few thousand individual LED pixels. Modules are the smallest serviceable unit, and multiple modules – between 100 and 200 – are mounted into a large rack to create a screen. The steel frame that supports the modules includes catwalks to allow servicing from the rear.

The distance between individual pixel LEDs is known as “pitch” and is measured in millimeters. Using modules with a 3.33mm pitch yields a screen that is about 44x22.5 feet (13.7x7.0 meters). To create a giant LED screen, four such arrays would

would weight about 50,000 pounds (23,000 kilos). It would also require a lot of power: up to 250 amps at 208 volts, although the actual usage would only be about 10% of that. Richards estimated that the installation of a 70-foot system would take a crew of four about two weeks, apart from any other work needed for HVAC, electrical, etc.

Nick Conti is with **Samsung Electronics America**, the only company currently providing LED displays in cinemas. He compared the company’s Onyx product, developed specifically for movie theaters with laser projection systems. In projectors, the light travels through prisms, bounces off imaging devices, and passes through lenses before bouncing off the screen and into the viewers’ eyes. In contrast, the light from an LED screen goes straight to the viewer.

The brightness of the Onyx system ranges from 0 to 146 foot-Lamberts, compared to 0.005 to 30 fL for RGB laser projectors. In practice the contrast ratio of the Onyx is about 500,000:1, compared to 6,000:1 for the best laser systems. The color depth of LEDs is also greater than laser projectors: about 281 trillion colors compared to 35 trillion.

Conti mentioned that the DCI spec currently requires a one-to-one relationship between the resolution of the display

be used, and content would have to be mastered at 8K.

LED screens are much heavier than the vinyl screens used with projectors, so a very solid floor is needed to support that weight. Richards estimated that a 68-foot LED screen for a GS theater

and the content; that is, showing 4K content requires a screen that has 4,096 horizontal pixels. However, that requirement may change as early as 2021, allowing more flexibility in designing LED displays in varying sizes and pixel pitches.

At over 100,000 hours, the lifetime of LEDs is “exponentially larger than any component in a projection system.” Replacing a damaged or defective module can be done in about an hour. The only preventive maintenance is to vacuum dust off the panel and recalibrate the system every two years. There are no consumables. Conti says an LED screen would add a slight additional heat load to a theater, but not enough to require a change to the HVAC system.

Because LEDs are solid panels, loudspeakers cannot be placed behind the screen as they are with perforated projection screens. The center channel speaker is placed at the top of the screen, and audio tracks are processed to move the perceived sound image to the middle of the screen. In addition, “reflector horns” mounted on the sides of the theater bounce sound off the screen back to the audience. The system has been certified for **Dolby Atmos** and **DTS-X**.

Conti estimated the total cost of ownership for a 24x46-foot (7.3x14-meter) Onyx system, including sound system and media player, to be “a little less than \$900,000” over a 26-year period. (A giant-screen system would be roughly four times that.) “All of that is in equipment, power consumption, and installation. There is no spend for consumables or preventive maintenance.”

Evans & Sutherland’s president and COO, **Kirk Johnson**, described the DomeX system the company announced last summer and will be delivering in 2020. He said that “as interesting as LED systems are to flat screens, to domes they are revolutionary because of their ability to overcome the cross-bounce and contrast problem in domes. Producers are now free to create content without concerns about contrast.”

He started by outlining some of the limitations of projection systems in dome theaters. In addition to the biggest issue — cross-reflectance — projection systems like the IMAX 15/70 film projector and the new IMAX laser system place the projector in the center of the theater, taking up prime seating space, and multi-projector fulldome systems sometimes mount projectors in the cove in front of the audience, which means they are sometimes visible. Lenses, particularly fisheye lenses, distort the images, adding chromatic aberration and other artifacts. And single-projector systems can have issues with brightness uniformity, with edges being as low as 50% of the brightness in the center.

LED panels have none of these problems: they are matte black, with a reflectivity of about 1%, compared to 30% or higher for dome screens. LEDs can output light levels of 50–100 fL in a 66-foot (20-meter) dome, without lowering contrast. There are no issues with projector placement, lens distortion, or image uniformity.

Johnson discussed some of the considerations involved in installing an LED dome in a new or existing dome theater. Perhaps one of the biggest issues is weight: LED dome systems will be “two-and-a-half to three times what you’d expect from your current Spitz dome.” Also, the LED’s dark panels are not suitable for optomechanical planetarium projectors or existing laser show technology. However, Johnson expects LED technology to make possible a whole new class of planetarium and “laser” shows.

Another issue is DCI compliance: although DomeX exceeds DCI image quality specifications, there is no DCI standard for encryption of dome content. However, Johnson said that achieving compliance is a high priority for the company.

Regarding sound systems, he said that although most LED panels are not perforated, like projection screens, E&S is looking into the possibility of perforating them, and is working with dome audio experts on the possibility.

DomeX will offer 8K images that will be brighter, and with higher contrast than existing dome or flat-screen systems, at

frame rates up to 120 fps, and in stereo 3D. Current GS and fulldome content transfers easily to DomeX, and in most cases looks better than ever, although in some cases flaws in the source material can be exposed.

Initial capital costs will be higher, although Johnson expects prices to decrease over time, and he points out that over the life of the system, the annual cost will be roughly comparable to current laser systems.

Technical session

The Technical Session featured three presentations on the topics of sound mixing, shooting 3D versus converting, and the history behind **Stephen Low’s *Beavers*** (1988), and the director’s efforts to give the film a “digital facelift” with new footage and a re-release as ***Beavers: The Director’s Cut***.

Masters Digital is an audio production company located about 17 miles (27 kilometers) from the conference location in Victoria. The company’s owner, **Tim Archer**, set up an audio mixing station in the middle of the IMAX theater to demonstrate how GS films are mixed, using ***Great Bear Rainforest*** (2019) which was filmed by **Spirit Bear Entertainment** in British Columbia. Archer routinely uses IMAX Victoria to mix sound tracks for GS films.

Using little more than a laptop connected by a network cable to the IMAX digital projection system, Archer showed how he can preview, equalize, re-balance, and mix the dozens of audio channels that make up the sound track of a GS film: narration, musical score, ambient location sounds, sound effects, and more. All the various elements can be placed and moved around the theater space using the IMAX sound system’s 12 channels.

Mixing in an actual theater instead of a studio

control room gives Archer a much more accurate idea of how the soundtrack will sound in other theaters. Although GS filmmakers have mixed their tracks in actual theaters for decades, computers and digital audio and projection technologies have dramatically simplified the process since the days of 24-track analog audio tape recorders and huge multi-channel mixing desks.

Michael Daut, of **Michael Daut Productions**, and **Sean Phillips**, of **MacLeod Productions**, presented a demonstration on the differences between shooting native 3D and converting 2D footage to 3D in post. Daut explained that the 3D experience in GS theaters is very different from that of conventional multiplexes, because of the size of the screen. The orthostereo effect is a unique differentiator between the two types of cinema.

Phillips said that the benefits of native 3D include the fact that it creates an immersive giant-screen experience automatically, and that shooting two complete sets of images increases the perceived sharpness. “Your two eyes integrate those double sets of pixels and offsets in space and create something that’s even sharper than either one would be separately.” The cost of native 3D keeps dropping, and it can be efficient in controlled or scripted shooting circumstances.

The drawbacks are that it is much harder for “run-and-gun” documentary-style shooting. Long-lens wildlife photography is problematic, because “it makes every-

(see *GSCA* on page 8)



Tim Archer of Masters Digital demonstrated sound mixing in the theater.



Stephen Low (left) was interviewed by Daniel Ferguson about making *Beavers*.

(from *GSCA* on page 7)

thing look like a cardboard cutout.” And although costs are going down, shooting 3D is almost always more expensive than post conversion.

Daut pointed out that there are reasons to use each technique, saying that “2D-to-3D conversion does not work in all cases, there are times when shooting in native 3D is essential, and times when it is not practical or even possible.”

They gathered a number of scenes shot in native 3D for various GS films, then asked two post houses — L.A.-based **Legend 3D** and **Onsight** in London — to use one eye to of each to convert the scenes to 3D. (The companies donated their services for this test at no cost to the GSCA.) In the session, they projected the original 3D footage, followed by the converted version, while Phillips and Daut commented and pointed out things to look for.

Daniel Ferguson of **Cosmic Picture** told director **Stephen Low** that *Beavers* was the first IMAX film he ever saw. “I loved it then, and I loved *The Director’s Cut*. I think the film is a master class, and I don’t use that term lightly.” Low explained that three technical breakthroughs led him to consider re-releasing the film. He had always wanted aerial shots in the original film, but the camera mounts of the late 1980s were “crappy, and I couldn’t make them work. **Greg [MacGillivray]** made them work, but I couldn’t figure them out.” Once stabilized platforms like SpaceCam came along, good aeri- als were easier, and while he was shooting *Rocky Mountain Express* (2011) Low captured

some shots he thought would work well in *Beavers*.

The next technical breakthrough was the IMAX laser projection system. After Low was convinced it was good enough, he started the process of scanning the 30-year-old 15/65 footage to 8K digital, at a cost of

about \$100,000. The final piece was the new digital sound systems in theaters. “The combination of those things made it worthwhile to finish the film. I had wanted those aeri- als from the beginning, and now we could upgrade the film.”

Low explained how he came to make the film in the first place. While working on a previous film for children in northern Ontario, he found himself in a library, and asked the librarian what the most popular topic with children was.

“She said, ‘No question: beavers!’ She had to order new beaver books every year because they just got worn out.

“So I had that idea in my head, and the next month I was in Japan, and the Japanese power company, **Chiba Electric**, asked me to make a film about the story of nuclear power. I thought about this for a few minutes. The whole board was there, chain smoking. I said, ‘That’s a topic, not a story. I suggest using a story, instead of a topic.’

“They said, ‘What story?’ I said, “Well, it’s got engineering, it’s epic in scale, it’s the transformation of an eco-system.’ They all got excited, and then I said, ‘Beavers.’

“They said, ‘Oh, no, Mr. Low. That’s crazy.’ So they sent me

home. And about six months later, ‘Mr. Low, we thought about the story. And we’ve decided to do the beaver film.’

“And the only thing I knew about beavers was what that woman had told me in the library.”

(For more about *Beavers: The Director’s Cut*, see **Diane Carlson**’s article in the September 2019 issue of *LF Examiner*.)

Dome Day

For the last day of the conference, the meeting moved to Vancouver, BC, a three-hour bus and ferry ride from Victoria.

Science World at Telus World of Science was the host for screenings of five films on the museum’s 400-seat, 89-foot (27-meter) IMAX 15/70 film dome theater. The films screened were:

<i>Apollo 11: First Steps Edition</i>	MacGillivray Freeman
<i>Back From the Brink</i>	Cosmic Picture
<i>Superpower Dogs</i>	Cosmic Picture
<i>Great Bear Rainforest</i>	MacGillivray Freeman
<i>Volcanoes: The Fires of Creation</i>	SK Films

In addition, **Ryan Jackson** of **Full Circle Visuals** described “Turning the Dome into a Time Machine,” a presentation he gave at the 2019 **IMERSA** Summit in Columbus in February (see article in the *Feb.-March* issue.)

The GSCA’s next meeting will be its Film Expo in Los Angeles, March 9-10. Its 2020 fall conference and trade show will be held in Chicago, Sept. 20-24, followed by a Theater Symposium on Sept. 25. For more information, visit giant-screencinema.com.



Science World Telus World of Science in Vancouver hosted Dome Day.

Boosting Capture Rates and Theater Revenues

(from **GRIESMER** on page 1)

from my perspective the library of existing films was more than adequate for the foreseeable future. And at the time the Maritime Aquarium had other challenges facing its attendance shortfalls.

Fast forward 31 years to 2019, which has seen 11 new films released, while in the past decade the number of new GS releases per year has averaged nine.

Yet as I listened to the discussion in “We Need to Talk: A Town Hall Meeting on the Giant Screen Industry’s Business Models” in Victoria (see *conference coverage article, Oct.-Nov. 2019*), I was transported back to 1988. The similarity of the descriptions of the state of the giant-screen industry, the enormous challenges threatening its long-term sustainability, and the changes needed to fix them, was remarkable. As I listened to the complaints about film production, distribution, and theater programming, my sense of déjà vu was eerie.

I support meetings like this that promote dialogue, especially when the moderator is someone like Paul Fraser (now principal of **Blaze Cineworks**), whose thoughtful contributions and experience structured the conversation in Victoria. However, I am less supportive of conversation that appears to have a 30-year history of redundancy, coupled with insufficient analysis. We need to move to a more productive and informed discourse that appreciates our individual responsibilities to our respective stakeholders. And at the risk of sounding preachy, a bit of common sense may be in order.

As a CEO, one of my responsibilities is to my organization’s bottom line, which provides the foundational support for its

long-term sustainability. Free-choice learning institutions are so varied in their mission, content, and size that there will be no one-size-fits-all solution. CEOs are responsible to their institutions first, and much less to the health of any particular firm in their supply chain, notwithstanding the need for smart, informed, and customary empathy. But as filmmakers

a business model that maximizes the return on the institutional and theater capital and community investment. I do not, and should not, take into consideration whether the royalties I pay today affect someone else’s decision to make a documentary film. Somehow, filmmakers, motivated by many factors, will make the films that they feel compelled to produce and/or distribute.

Our industry has many excellent filmmakers who produce consistently good products and at the same time are smart business people. They shoulder their business risk in the development, production, and sale of the products they make available in the marketplace. And institutions with GS theaters take on their own corresponding risks when they select films or exhibitions, or that is the way it



The Virginia Air & Space Center.

enter the market, some will succeed and some will fail.

At the **Virginia Air & Space Center** in Hampton, VA, which I joined five years ago, we are driven to set pricing and product bundling so that the total experience exceeds the customer expectations. We know that the key to our long-term sustainability is building a community of stakeholders that sees us not just as a *nice* place, but an *essential* place.

Institutional theaters need to focus on providing the highest possible price/value proposition to their customers at the lowest cost, to maximize the return on investment to the institution and its theater. Suggestions, whether 30 years ago or today, of voluntarily paying higher royalties are, in my humble opinion, not only ludicrous, but irresponsible.

I am responsible for negotiating the best possible royalty agreements and producing

should be, in my opinion.

We all need to assume our respective business risks while being cognizant of the impacts we have on those we value in our industry. Producers have indicated they have problems with their return on investment. We live in an age of more frequent and more volatile business disruptions that demand producers, as well as theaters, ensure their business responses are based on analytics, not emotion supported by a lack of business acumen.

CEOs are usually concerned about depending too heavily on too few suppliers, preferring a diversity of suppliers. We should be concerned about keeping entry to the market open and accessible, but not at the expense of making contractual arrangements that are contrary to the best interests of our institutions. The industry has some very well-run film production

(see **GRIESMER** on page 10)

(from **GRIESMER** on page 9)

companies who produce high-quality films that more than satisfy our customers. It should be no surprise that many theaters gravitate to producers who focus on high production values while also providing strong entertainment.

At the Virginia Air & Space Center, we have recently become quite strict on the issue of film production values. Our new policy is that we will opt to take our visitors on a great musical journey over a mediocre asteroid journey. This strategy involves a bit of discipline and we recognize that it is subjective.

But our objective is clear: we must not bore our customers. "Good" is just not good enough. It is important to exceed expectations. We want and need our visitors to enjoy themselves, return many times, perhaps become members, and leave our institution and our theater with satisfied smiles on their faces, one step closer to deciding that the Virginia Air & Space Center is *essential* to their community. Achieving that takes us further down the road to sustainability. (And just so there is no misunderstanding, we pray for great asteroid GS films.)

When I worked at the Maritime Aquarium, I was the one who lobbied for the IMAX concert film, *Rolling Stones at the Max* (1991). If my memory serves me well, we were the second to sign that film, right after the Canadian Museum of Civilization (now the **Canadian Museum of History**) in Gatineau, Quebec. Beyond the Rolling Stones brand, and the fact that **Keith Richards** lived 15 minutes up the road, *At the Max* was an iconic and innovative film. The same was true of *Titanica* (1992). And as innovative transitions and disruptions continued with Imax Corporation's move to the Hollywood multiplex

model, I continued, albeit with a bit more hesitancy, to support these new trends at the Maritime Aquarium.

Shortly after I arrived at the Virginia Air & Space Center in late 2014, we disengaged from Hollywood films in favor of traditional GS documentaries, only to find that our capture rate remained stuck at 23–26%. By way of historical perspective, 30 years ago I had budgeted for a solid, achievable 58% capture rate at the Maritime Aquarium, almost always exceeding that number on an institutional attendance of 450,000 or more. And this was before IMAX became a brand.

The Virginia Air & Space Center's an-

(IMAX-only tickets are also available.) This forced combo creates a hypothetical 100% capture rate, although the actual number is slightly lower, because some people do not have the time, or choose not to see a film.

To my great relief, not only did we receive no customer push-back, our visitor satisfaction with the total institutional visit dramatically improved, even though we had doubled the average ticket price! Although our static air and space exhibits were improving, they did not do so dramatically. We therefore attribute the improved ratings on Trip Advisor and other social media to the fact that now nearly all visitors were having an IMAX Experience.

But if this were really going to work, we could only show GS films that resonated strongly with our audience. High-quality production values and story lines became all-important aspects of the films we booked. It is not easy to say "no, thank you" to a film producer/distributor we may like personally, but who is offering a lower-quality product. But our priority was improving the visitor experience and strengthening our new



Bob Griesmer

nual attendance is closer to 100,000 so that 23% capture rate was more than just a little problematic. Our theater was hemorrhaging losses, and the switch to documentary films without vast improvement in the capture rate prompted us to wonder why we were doing this in the first place. Sound familiar? It is a little like the film producer who says, "My return on investment is not adequate; why I am doing this?"

In a move that I can now confess made me a bit nervous, we eliminated the option to see the exhibits without an IMAX film. Every entry to the museum now includes the visitor's choice of movie.

branding in the marketplace, not considerations of the potential impact on our supply chain.

To put it another way, when I get out of bed each morning in Fort Monroe, VA, my focus is on the interests of the Center and executing the business strategy I've outlined in this article. When Greg MacGillivray rolls out of bed, he runs to the ocean to surf, and then goes to the office, where he is only interested in making the best films possible and running a successful business. The only difference, in this respect, between Greg and me is that he arrives in the office a lot more refreshed and tanned than I do!

Although we are very pleased to have increased our theater attendance dramatically and hence our overall annual royalties to film producers and distributors, it was the goal of driving up our average ticket price that drove the change to our business model. We believe that when we do all we can to strengthen our particular business, there are likely to be spillover effects to the rest of the industry. But that benefit was not our primary goal.

While recent industry research reported that 50% of museum theater visits are motivated by the film, not the museum, we have not found this to be the case at the Virginia Air & Space Center. At least, I have no metrics to support that assertion.

I would hope that those who have found the secret advertising formula, and who do proper and honest analysis of the total cost and incremental advertising, will share their methods and real results at some future conference. Our IMAX theater advertising is integrated into the Center's overall advertising/PR, attendance, and branding strategy. However, we almost always reference the IMAX films. Generally speaking, specific films do not significantly drive annual attendance at our institution.

We select two films a year, but this may soon become three. To be sure, at an air and space center and a NASA Visitor Center, a great film like *Apollo 11* is likely to outdraw another excellent film whose topic might not align so well with visitor expectations. But we feel that those who choose that other film must walk out with the same high satisfaction with the theater experience. This is essential to the strategy.

Not every filmmaker gets the same share of our incremental revenue. They only get incremental revenue when a customer picks their film. We run new films three times a day, then over the course of a year

drop them to two shows, and finally to one show per day. This is not cast in stone, but so far we have been able to ensure that the films we book significantly surpass their minimal contract showings. We usually sign for 300–350 shows and hope to deliver 500.

We have revisited our royalty structure with film producers. To be honest, when we first explained this change in our business model, not everyone immediately understood the implications of all visitors being sold a movie ticket. When a customer selects a film, the producer/distributor gets the royalty even if they don't attend the show. Thus the amount of the film royalty to individual producers/

al or seasonal attendance, I would respectfully suggest that not being able to satisfy excess demand is preferable to having empty seats. Visitors will learn that they need to buy advance tickets online or risk being closed out.

And let's not forget that when a product is in high demand, there is the option of a price increase, which benefits both the institution and the film producer/distributor. Last I heard, the producers of *Hamilton* on Broadway are not complaining that their orchestra seats go for around \$700.

This is the first article I have written on the giant-screen industry since that first conference in 1988. I have attempted to

be constructive in tone, recognizing that my reputation for directness precedes me. This is a special industry mostly because of the people who comprise it. My hope is that we continue to experiment and innovate, collect and analyze data, ensure open access to new entrants, and encourage innovation in our individual business models, while producing wonderful, entertaining, and thought-provoking experiences that ensure the success of everyone in our industry.

It may be a while before I have more thoughts to share, but stay tuned. I may have something else to say in another 30 years.

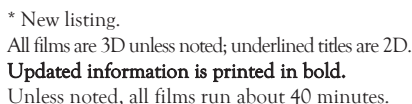
Robert (Bob) Griesmer is the executive director and CEO of the Virginia Air & Space Center, the official NASA Langley Visitor Center. He has more than 30 years of experience in leadership roles in free-choice learning institutions, having previously served as president and CEO of the Children's Museum in West Hartford, CT, and COO at the Maritime Aquarium at Norwalk, CT. He can be reached at RGriesmer@vasc.org



The Maritime Aquarium in Norwalk, CT.

distributors depends on the customer. It does not depend on the size of our advertising budget for a particular film, if there is one, only our ability to get them in our door. As a result, our royalty rates are, in fact, lower, but our gross outlay to all film distributors is significantly higher. And this is what I heard producers/distributors saying they needed.

Others in the industry have made this same product bundling transition, several with higher annual attendance than ours, and have done so without customer resistance or complaints. If you worry that you cannot make this change because you will not have enough seats, based on annu-



– Principal photography is complete, post production is under way.

Imax Corporation, Huahuang Pictures; distributor: Imax Corporation; director: W.D. Hogan; producers: Jini Durr, Phil Groves; DP: Sean MacLeod Phillips; script: Phil Groves; executive producers: Anna Chi, Phil Groves. Cast: Len J. Phillips, Steve Tsang, Bernadette Janssen. Release: Feb 14, 2020.

– Principal photography is complete, post production is under way.

Giant Screen Films; distributor: Giant Screen Films; director: David Clark; producers: Don Kempf, Deborah Raksany, Andy Wood; DP: Reed Smoot; script: Deborah Raksany, Andy Wood; score: Cody Westheimer. Cast: Libby Ives, Dr. Patty Ryberg, Dr. Nathan Smith. Release: Feb. 14, 2020.

MacGillivray Freeman Films; distributor: MacGillivray Freeman Films; director: Greg MacGillivray; producer: Shaun MacGillivray. **Narrator: Morgan Freeman.** Release: Feb. 14, 2020.

- Mirage 3D; distributor: K2 Studios; director, producer, writer: Robin Sip. Release: February 2020.*

Definition Films; distributor: K2 Studios; producer: David Gross; script: Amelia McCarten; executive

producer: Mark Kresser. Release: February 2020.
 Filmed recently in California and South Australia.
 Principal photography is complete, post production
 is under way.

Oceanic Research Group; distributor: MacGillivray Freeman Film Distribution; director, DP: Jonathan Bird; producers: Jonathan Bird, Art Cohen; script: Jonathan Bird, Art Cohen; score: Bruce Zimmerman; executive producers: **Christine Bird, Mike Day, Dave Duszynsky, Robin Doty**. Cast: Dr. Gina Moseley, Dr. Larry Edwards, Brian Kakuk, Todd Kelly, Dr. Keith Tinker. **Narrator: Bryan Cranston.** Release: March 13, 2020.

- All photography is complete, post production is under way.
- November: Recording score with City of Prague Philharmonic Orchestra.
- World premiere will be held in St. Paul, MN, in March 2020.

Definition Films, Helio Projects Asia; distributor: K2 Studios; director: Murray Pope; producers: Christopher Zaryc, David Gross, Murray Pope; DP: Earle Dresner; script: Murray Pope, Paul Phelan; executive producers: Ed Capelle, Mark Kresser, Nick Robinson, Kulikar Sotho, John Weiley. Release: Spring 2020.

- Ouragan Films, nWave Studios; distributor: nWave Pictures; directors: Cyril Barbançon, Jacqueline Farmer; producer: Jacqueline Farmer; DPs: Cyril Barbançon, Jacqueline Farmer; script: Philippe Chappuis; score: Franck Marchal; executive producer: Eric Dillens; Release: Spring 2020.*

- Filming will resume near the end of the year.

Wild Pacific Media, Definition Films; distributor: K2 Studios; director: Nick Robinson; producers: Nick Robinson, Electra Manikakis, Peta Ayers; DP: Jon Shaw. Release: May 2020.

Sinking Ship Entertainment; distributor: *Sinking Ship Entertainment*; director: *J.J. Johnson*; producer: *Eric Beldowski*; DP: *George Lajtai*; script: *J.J. Johnson, Christin Simms*; score: *Michael-Paul Ella*; executive producers: *J.J. Johnson, Blair Powers, Christin Simms*. Cast: *Michaela Luci, Saara Chaudry, Nicola Correia-Damude, Amish Patel*.
2D. Release: June 2020.

- A shorter version is being prepared.

Syncope; distributor: Warner Bros.; director, writer: Christopher Nolan; producers: Christopher Nolan, Emma Thomas; DP: Hoyte Van Hoytema; score: Ludwig Göransson; executive producer: Thomas Hayslip. Cast: John David Washington, Michael Caine, Kenneth Branagh, Robert Pattinson.

Definition Films, Wild Pacific Media; distributor: K2 Communications; director: Nick Robinson; producer: David Gross; executive producers: Robert Kresser, Mark Kresser. Cast: Tim Jarvis. Release: Fall 2020.

Cosmic Picture; distributor: tba; director: Daniel Ferguson; producers: Taran Davies, George Duffield, Daniel Ferguson; script: Daniel Ferguson, Mose Richards; DP: Reed Smoot. Release: Fall 2020.

Wild Expectations, Ltd.; distributor: tba. Release: 2020.

Saint Thomas Productions; distributor: nWave Pictures. Narrator: James Faulkner. Release: 2020.

Milbrand Cinema; distributor: tba; director, producer, DP: Lance Milbrand; editor: Dave Choice; score: Icarus Music. Cast: Kathleen Dudzinski, Eldon Bolton. Release: 2020.

- November: Will wrap principal photography.

Grand Schema; distributor: K2 Communications; director: Christopher J. Scott; producers: John Molli, Christopher J. Scott, Aschi Michel, Tom Fore; DP: Robert Hollingworth; script: Christopher J. Scott; executive producers: Rob Sharps, Doug Greenstein, W. Kyle Gore, Daniel Verbie, Tom McCollum. Release: 2020.

Distributor: K2 Studios; executive producer: Mark Kresser. Release: Early 2021.

MacGillivray Freeman Films; distributor: MacGillivray Freeman Films; director: Greg MacGillivray; producer: Shaun MacGillivray. Release: March 17, 2021.

- Principal photography is complete, post production is under way.

Oceanic Films; distributor: tba; director: Hugh Pearson; producers: Hugh Pearson, Myles Connolly; DP: Hector Skevington-Postles; writers: Hugh Pearson, Myles Connolly. Cast: Diane Gendron. Release: March 2021.

Howard Hall Productions, Oceanic Research Group; distributor: tba; directors: Howard Hall, Jonathan Bird; producers: Michele Hall, Christine Bird; DPs: Howard Hall, Jonathan Bird; script: Howard Hall; score: Bruce Zimmerman, Alan Williams; executive producers: Michele Hall, Christine

Jan '21

July '21

Jan '22

Eleph JTTGMR
FeaDin Wingsuit

Ireland
SharkH BluWha

SSea

AntITU FireF Wings3D

Bird. Release: Spring 2021.

- Shooting planned for Indonesia and the Bahamas in spring 2020.

Antarctica: Into the Unknown

BBC Studios Natural History Unit; distributor: SK Films; director: Fredi Devas; producers: Jonny Keeling, Myles Connolly; script: Fredi Devas, Jonny Keeling; score: Jacob Shea; executive producer: Jonathan Williams. Release: 2021.

Fire Fighters

Sean Casey Productions; distributor: tba; director, DP: Sean Casey. 2D. Release: 2021.

- Shooting in Southern California began this fall and will continue through January 2020.

- Shooting will resume next summer.

Wings 3D

Dorsey Pictures, Archipelago Films; distributor: SK Films; directors, script: Andrew Young, Susan Todd; DPs: Andrew Young, Michael Male, Neil Rettig; executive producer: Chris Dorsey. Release: 2021.

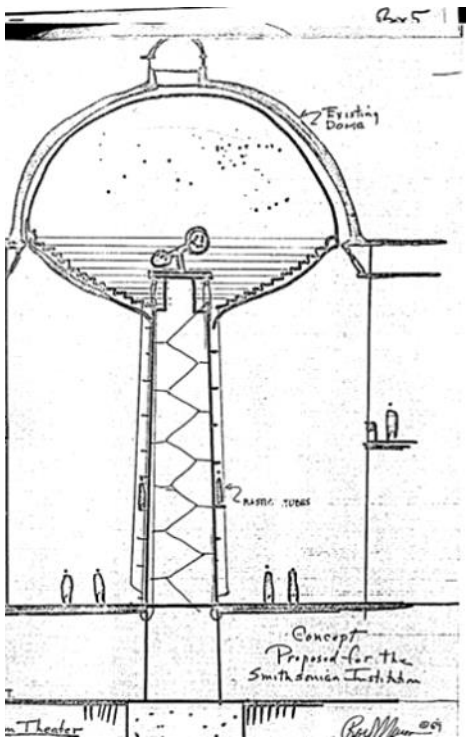
- December: In Bosque del Apache, NM, filming sandhill cranes, in Arkansas shooting wintering mallard grounds.
- January: North Dakota to film snow aerials, landscapes, and bison. Filming tiger salamanders below the ice.
- February: Filming yellow warblers in Costa Rica.

DMR FILMS:

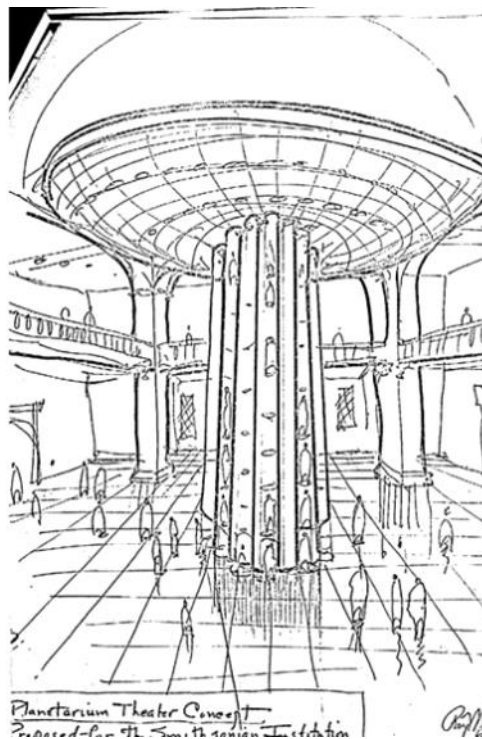
Title	Dist	Release	
Bad Boys for Life	SONY	1/17/20	
Doolittle	UP	1/17/20	
1917	UP	1/24/20	
Birds of Prey	WB	2/2/20	
Gambit	FOX	3/13/20	
Mulan	WDPD	3/27/20	
The New Mutants	FOX	4/3/20	
No Time to Die	MGM	4/08/20	
Artemis Fowl	WDP	5/29/20	
Wonder Woman 1984	WB	6/5/20	
Top Gun: Maverick	PAR	6/26/20	
The King's Man	FOX	9/8/20	
Avatar 2	FOX	12/17/21	



First AC and drone pilot Brandon Sargeant using a DJI Inspire 2, 6K Drone in North Dakota for Wings Over Water from Archipelago Film and Dorsey Pictures.



In the late 1960s, Smithsonian Secretary Dillon Ripley considered placing a planetarium inside the dome of the National Museum of Natural History.



“astronomical potential,” but it would be limited mainly to after-hours activities. Astronomical themes might also be used for local school programming “during the slower hours of the day” which would provide balance between aerospace and astronomy education. The physical space they envisioned was 300 seats under a 20-meter dome, with all consideration given to “rapid entry and exit” to “accommodate the most people in the most comfort in the shortest reasonable time.” One can see little if nothing of the initial dreams of the Washington Planetarium group in these very practical, fast flowing, aerospace-oriented plans.

What Would Drive the Show?

With building planning under way, the key questions became what to put into the planetarium and where would the projector come from? Spitz Laboratories in Delaware was the American leader, providing small and mid-sized projection systems; there were many hundreds of Spitz projectors dotting campuses, libraries, and landmarks. The company was also developing models for larger domes, promising new views of space from vantage points beyond Earth. They could also simulate the “general motions of a vehicle in space.”

There were also major manufacturers of planetarium projectors in Japan, and of course there was the possibility of acquiring a Zeiss projector. There were procurement rules to follow for purchased equipment, but a *donated* projector did not have to come from an American manufacturer. Collins seized upon this fact and by May 1972 was meeting with State Department staff to craft a strategy for approaching the German government about a Zeiss projector.

About a year of negotiations with the German ambassador led to a projector being part of a “bicentennial gift” to America, and this cleared the way for direct contact between Collins and the Zeiss Company. Through 1973, wording was finally found that was acceptable to one and all, suggesting that whereas the United States neither seeks nor expects gifts of any kind, it would be happy to accept a Zeiss projector if offered by West

(from **ZEISS** on page 3)

“Spacetarium” or a “Spacearium.”

Museum staff, notably **Melvin Zisfein**, seized on the Spacearium concept to answer a lingering question: would the facility be a “star show” or a “space show”? To Zisfein, this was a significant distinction, with very different philosophies, and projection hardware. The former, which Zisfein characterized as “spots-of-light-moving-across-a-dome” required an expensive precision projection system, like a \$280,000 Zeiss Mk VI, the current top-of-the-line. The \$30,000 to \$60,000 “space show” option, Zisfein pointed out, “seems hardly to need a star display at all” because all effects could be produced by banks of slide projectors, motion picture projectors and “special-effects devices.” Zisfein described these as carrying the audience “visually to the sites of launchings, the interiors of moving space vehicles, and the surfaces of planets and moons.” To Zisfein and many others, this was the obvious choice.

Zisfein recommended a staged approach, possibly using a “star ball” with a bank of projectors for horizon panoramas and special cine-projectors, in what he

hoped would be an “Experimentarium” in the Smithsonian’s Arts and Industries building. It would prepare them for programming in the ultimate National Air and Space Museum building. This setup would allow them to develop a “space oriented star and planet projection planetarium” that would provide “Grand Tour” scenarios. Zisfein envisioned a wide range of programming for the Experimentarium, including some 11 scenarios, such as an “extra-solar system landscape” depicting the Milky Way as seen from an airless planet orbiting a binary star in one of the Magellanic Clouds. There would be a lunar landscape using “retouched prints of the Apollo 15 panorama,” astronauts roving in a lunar crater, and depictions of lunar orbit rendezvous maneuvers and docking maneuvers. There would also be non-space panoramas depicting a particular moment at Kitty Hawk in 1903, the “Charlière” hydrogen balloon rising from a 1782 Paris panorama, WWI Spads performing aerobatics at Rhinebeck, NY, a low pass by a fast moving jet, and time-lapse meteorological phenomena.

Some National Air and Space Museum staff did consider the Spacearium’s

Germany. In December, prompted by Collins, rocket pioneer Wernher von Braun wrote to German Chancellor Willy Brandt, hailing the public visibility (“comparable to the Statue of Liberty”) a Zeiss machine would have on the National Mall. In addition, it would draw friendly attention to the “German optic and precision mechanics industry.” A 21-meter dome theater was already being designed, Von Braun noted, waiting for the best possible projector to fill it.

West Germany quickly agreed and spontaneously offered a projector, which was accepted by Ripley in March 1974, and announced publicly at a White House state dinner in the summer of 1975. There was no time to waste. Al Eftink, recently hired from a planetarium post in Hartford to be the National Air and Space Museum’s chief technical and special-effects guru, flew to Germany. With two Zeiss technicians, he brought the projector to the museum and installed it, along with some 200 auxiliary projectors around the dome. He also created special warping harnesses to convert flat artwork into photographic montages to cover the dome seamlessly with out-of-this-world images. Eftink worked with Charles G. Barbely, who had managed the Experimentarium in 1971 while planning for the new Spacearium, to prepare its first show, *Cosmic Awakening*, for the bicentennial. They both reported to Von Del Chamberlain, who, since 1973, had been the museum’s first chief of its Presentations & Education Division and an astronomer in the Space Science and Exploration Department.

With the museum’s opening on July 1, 1976, visitors could touch a piece of the Moon and walk through Skylab. And if they were persistent and observant, they could take in a space show in what was called the **Albert Einstein Spacearium**, on the second floor behind the NASA F-104 Starfighter.

In any other facility, the state-of-the-art planetarium would have been the most popular internal attraction. But on the opposite side of Milestones Hall from the planetarium, and much more visible on the ground floor, was the **Samuel P. Lang-**

ley Theater, the sixth permanent IMAX theater in the world. Its signature film *To Fly!*, produced by **Francis Thompson, Inc.**, and **MacGillivray Freeman Films**, instantly became the most popular attraction in what was soon the most popular museum in the world.

Ironically, even though some museum staff, led by Zisfein, had argued against a major sky projector in favor of an immersive space travel capability, citing cost as one factor, the donation of the Zeiss Mk VIa settled this question and led to over 40 years of a healthy combination of both options. A highly creative staff of planetarium educators, writers, artists, and technicians produced space shows and live star shows, led by Barbely, Chamberlain, Eftink, Tom Callen, and James Sharp. In the early 1990s, Sharp and his gifted team, with the help of **Sky-Skan** of Nashua, NH, upgraded the Zeiss’ control system to make it more user-friendly. In the early 2000s, the complex array of optical slide and special-effects projectors was replaced with a Definiti digital fulldome projection system from Sky-Skan. It was upgraded to 6K in 2014. Likewise, the IMAX theater (now named for **Lockheed Martin**) converted to an IMAX laser projection system in 2016.

No decision has been made about what digital system will be installed when the

Einstein Planetarium reopens in 2022, but between it and the IMAX theater, there is no doubt that as the National Air and Space Museum approaches its 50th anniversary, it will continue to offer millions of visitors compelling, immersive experiences of flight, space travel, and astronomy.

Acknowledgements

This article is based upon a wide array of sources, but I want to point out especially two recent Ph.D. theses by Katie Boyce Jacino (on Zeiss), and Jieun Shin (NASM history), that provided significant insights. I also want to thank Tom Callen, Geoff Chester, Von Del Chamberlain, Sean O’Brien, Andy Johnston, and Eric Long for their support.

This article was originally published on the National Air and Space Museum’s Web site, and is reprinted by permission.

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Sky-Skan upgraded the control panel for the Zeiss instrument in the early 1990s.

Bookings: December 2019 by Film

708 bookings of 94 films in 163 theaters

These listings do not include Hollywood films shown in multiplex IMAX theaters. Those films are listed when they are shown in non-multiplex theaters, and conversely, non-Hollywood giant-screen films showing on multiplex IMAX screens are also listed.

Listings shown in **bold face** below are new or updated listings. The rest are unchanged from the previous

month's issue.

The data on the following pages are *not* warranted to be comprehensive or accurate in every detail, despite our best efforts to make them so. They have been compiled from theater surveys, distributors, the Web, and other sources.

We will make every effort to improve the thorough-

ness, and accuracy of these data. If your theater or film is not shown here, please get in touch with us to update our listings.

Where a date is not shown, it means that no date was provided by the source or, in the case of a closing date, that no date has been set, or that the run is indefinite.

The key to film abbreviations is on page 21.

Film	Theater	Open	Close	Film	Theater	Open	Close	Film	Theater	Open	Close
A11FSE	Atlanta FMNH	6/1/19	5/30/20	AmazAdve	Cleveland	1/9/18	6/30/20	Bugs	Fort Lauderdale	10/25/19	10/24/20
	Austin TSHM	9/1/19	8/30/20		Edmonton TWS	1/19/18	6/30/20		Hastings	10/25/19	10/24/20
	Baton Rouge LASM	7/6/19	7/5/20		Glasgow	4/12/19	4/14/20		Lubbock SS	12/6/19	12/2/20
	Birmingham AL	5/19/19	5/18/20		Houston MNS	4/21/17	12/31/19		Orlando SC	11/8/19	11/7/20
	Bradford	5/17/19	5/16/20		Indianapolis Imx	9/8/17	5/31/20		Salt Lake City Clark	11/16/19	11/15/20
	Branson	6/14/19	6/13/20		Kuwait SCK	6/14/18	3/31/20		San Jose Tech	10/25/19	10/24/20
	Chantilly	5/17/19	5/17/20		London BFI Ode	3/29/19	3/31/20		Seattle PSC 2	12/20/19	12/19/21
	Chattanooga TA	6/14/19	6/13/20		Norwalk MA	5/17/19	5/16/20		Victoria DCI	11/22/19	11/21/20
	Chicago MSI	5/24/19	5/23/20		Orlando SC	2/24/18	6/30/20		Columbus COSI	9/15/14	6/30/20
	Cincinnati MC	9/28/19	9/27/20		Peoria RM	6/20/18	6/30/20		Davenport Put	10/1/12	4/28/20
	Cleveland	5/18/19	5/17/20		Pittsburgh CSC	11/17/17	12/31/20		Edmonton TWS	6/30/18	6/30/20
	Copenhagen TBP	6/12/19	6/11/20		Portland OMSI ET	2/16/18	2/16/20	ConqOTS CRA Cuba	San Diego RHF	7/1/14	6/30/20
	Davenport Put	7/13/19	7/12/20		Richmond SMV	5/1/18	6/30/20		Victoria DCI	8/18/17	5/14/21
	Dayton	5/25/19	5/24/20		Sacramento Imx	9/8/17	6/30/20		Fort Worth	6/10/17	9/30/20
	Dearborn THF	6/17/19	6/16/20		Seattle PSC 2	11/10/17			Aguascalientes	10/25/19	3/25/20
	Denver MNS	5/17/19	5/16/20		Sioux Falls	12/2/17	5/31/20		Boston MOS	2/15/19	2/29/20
	Fort Worth	5/17/19	5/16/20		Syracuse MOST	2/16/19	2/15/20		Charlotte DP	9/1/19	9/1/20
	Garden City	5/21/19	5/20/20		Tallahassee CLC	4/28/17	6/30/20		Chicago MSI	3/1/19	3/31/20
	Hague	5/21/19	1/30/20		Toronto OSC	10/6/17	6/30/20		Edmonton TWS	2/1/19	2/28/20
	Hampton VASC	6/15/19	6/14/20		Vancouver TWS	12/22/17	6/30/20		Galveston	3/9/19	3/31/20
	Huntsville USSRC	6/1/19	5/30/20	AMJ	Victoria DCI	4/14/17	6/30/20		Gatineau	2/1/19	2/28/20
	Hutchinson	5/17/19	5/16/20		Aguascalientes	4/5/19	12/31/19		Hutchinson	2/15/19	2/28/20
	Indianapolis Imx	7/12/19	7/11/20		Austin Reg	3/1/19	6/1/20		Lucerne STM	10/25/19	10/31/20
	Kagoshima MSC	7/1/19	12/31/19		Baton Rouge LASM	5/25/19	5/24/20		Memphis Pink	9/19/19	9/17/21
	KSC 2	5/17/19	12/31/19		Cleveland	3/23/18	3/31/20		Pittsburgh CSC	11/1/19	10/31/20
	London SM	5/17/19	5/16/20		Dearborn THF	2/16/18	2/18/20		Saint Louis SC	12/22/18	12/31/19
	Los Angeles CSC	7/15/19	1/30/20		Guayaquil	4/16/19	4/15/20		Saint Paul SMM	3/1/19	3/1/20
	Lucerne STM	5/24/19	12/31/19		Hartberg	4/6/19	4/15/20		Seattle PSC 2	6/14/19	6/30/20
	Melbourne MV	10/1/19	6/30/20		Kapurthala	6/15/18	6/14/20	D-Day	Singapore DC	9/17/19	3/17/20
	Memphis Pink	5/25/19	5/24/21		Mexico City PAP	3/15/18	12/31/19		Tallahassee CLC	1/18/19	6/30/20
	Norwalk MA	5/17/19	5/16/20		Monterrey Pap	3/15/18	4/15/20		Victoria DCI	3/29/19	3/31/20
	Orlando SC	7/1/19	6/30/20		Moscow Kin	4/15/18	4/16/20		Columbus GA NIM	1/31/18	12/1/19
	Osaka Sci	7/20/19	7/21/20		Nassau Fus	10/30/19	10/30/21		Dayton	5/26/17	12/31/19
	Pensacola NAM	5/17/19	5/16/20		Pensacola NAM	2/26/19	2/27/20		Edmonton TWS	3/1/18	12/31/19
	Peoria RM	5/25/19	5/24/20		Peoria RM	2/16/18	2/17/20		Gatineau	9/1/15	12/31/20
	Philadelphia FI	5/17/19	5/17/20		Pittsburgh CSC	1/25/19	1/24/20		Hutchinson	12/31/17	1/31/20
	Phoenix ASC	5/17/19	5/16/20		Shanghai 3D STM	7/24/19	7/23/20		Peoria RM	4/2/15	2/28/20
	Pittsburgh CSC	5/19/19	12/31/20		Sioux Falls	2/1/19	5/30/20		Pittsburgh CSC	2/19/19	2/18/20
	Portland OMSI ET	5/17/19	5/16/20	AMMM	Tallahassee CLC	2/16/18	2/28/20		Raleigh	5/23/14	2/28/20
	Raleigh	7/5/19	7/4/20		Lehi	9/6/19	9/5/20	DinoAliv	San Jose Tech	5/15/19	6/30/20
	Sacramento Imx	7/12/19	7/1/20		London BFI Ode	9/1/18	2/6/20		Aguascalientes	4/13/19	4/30/20
	Saint Paul SMM	5/17/19	5/11/20		Melbourne MV	7/11/16			Portland OMSI ET	1/26/18	1/31/20
	Salt Lake City Clark	6/22/19	6/21/20		Victoria DCI	4/16/18	4/15/21		Gatineau	7/9/18	3/20/20
	San Jose Tech	5/17/19	5/16/20		Portland OMSI ET	1/26/18	1/31/20		Kolkata SC	3/1/19	12/1/19
	Seattle PSC 2	5/31/19	7/18/20		Gatineau	4/24/18	3/30/20		Mumbai NC	3/1/19	12/1/19
	Shreveport	7/4/19	7/3/20		Atlanta FMNH	1/11/18	1/10/20		Speyer Dome	1/1/15	12/30/19
	Sinsheim	5/17/19	5/16/20		Garden City	5/19/17	6/18/20	DreamBig	Baltimore MSC	2/17/17	3/1/20
	Speyer Dome	5/17/19	5/16/20		Kolkata SC	1/1/19	12/31/20		Baton Rouge LASM	6/30/17	12/31/19
	Tallahassee CLC	7/12/19	7/11/20		Baltimore MSC	3/1/19	6/30/20		Bradford	1/1/18	12/31/19
ACGOTS	Tijuana	12/2/19	12/2/20		Beijing 3D CSTM	11/1/19	8/5/20		Chantilly	2/17/17	2/16/20
	Toronto OSC	5/17/19	11/16/20		Chattanooga TA	3/16/18	6/30/20		Charlotte DP	8/26/17	12/31/19
	Toulouse CDE	6/1/19	12/31/19		Dearborn THF	8/1/18	2/29/20		Cleveland	3/17/17	3/31/20
	Valencia Spn	7/1/19	6/30/20		Edmonton TWS	11/8/19	11/7/20		Davenport Put	2/24/17	3/31/20
	Vancouver TWS	11/23/19	11/22/20		Fort Lauderdale	6/1/18	4/24/20		Dearborn THF	2/17/17	7/1/20
	Victoria DCI	9/20/19	9/19/20		Gatineau	6/1/18	3/31/20		Edmonton TWS	3/25/17	2/18/20
	Washington NASM	5/17/19	5/17/20		Guangzhou GSC	5/1/19	5/1/20		Fort Lauderdale	2/17/17	6/6/20
	Yellowstone	5/17/19	5/16/20		Guayaquil	4/3/19	3/31/20		Fort Worth	2/17/17	6/30/20
	Corpus Christi Lex	6/17/16			Hague	2/12/19	2/11/20		Garden City	12/1/17	12/31/19
	Dayton	6/17/16	12/31/19		Kuwait SCK	8/10/19	2/10/20		Grand Rapids Cel	7/15/17	7/31/20
	Pensacola NAM	5/26/17	6/30/20	AfricAdv	Lehi	5/24/18	5/24/20		Hampton VASC	2/17/17	6/14/20
AGWN	Toronto OP	6/1/18	6/1/20		Los Angeles CSC	9/28/19	4/1/20		Harrisburg	2/18/17	3/11/20
	Victoria DCI	5/3/19	5/31/20		Louisville KSC	3/23/18	6/30/20		Houston MNS	2/17/17	1/7/21
	Washington NASM	5/26/17	5/25/20		Norwalk MA	3/24/18	6/30/20		Indianapolis Imx	1/17/19	1/16/20
	Katowice CC		9/30/20		Omaha Zoo	11/1/18	6/30/20		Jersey City	2/17/17	11/15/20
	Krakow CC		9/30/20		Orlando SC	11/1/18	6/30/20		Kuwait SCK	6/25/17	8/31/20
	Lodz CC		9/30/20		Pittsburgh CSC	8/31/18	12/31/20		Lansing Cel	6/30/17	7/31/20
	Poznan CC		9/30/20		Portland OMSI ET	9/7/18	6/30/20		Louisville KSC	2/17/17	2/28/20
	Warsaw CC		9/30/20		Raleigh	6/4/18	6/30/20		Milwaukee	7/10/17	6/30/21
	Wroclaw CC		9/30/20		Saint Augustine	8/17/19	8/16/20		Monterrey Pap	2/2/18	4/15/20
	Boston NEA	7/1/19	2/15/20		Shanghai 3D STM	11/1/19	1/24/21		Moscow Kin	9/10/17	6/2/20
	Dongguan STM	1/1/19	12/31/19	BackWild	Sioux Falls	2/1/19	5/31/20		Nassau Fus	10/30/19	10/30/21
	Harbin STM	12/1/18	12/1/19		Sudbury	9/4/18	6/30/20		Peoria RM	2/18/17	6/1/20
	Orlando SC	9/1/19	3/31/20		Taichung NMMS	7/1/19	6/30/20		Philadelphia FI	3/1/18	12/31/19
	Portland OMSI ET	3/1/19	2/29/20		Tallahassee CLC	10/18/18	6/30/20		Pittsburgh CSC	11/17/17	12/31/20
	Shanghai 3D STM	1/1/19	1/1/20		Valencia Spn	4/1/19	6/30/20		Port of Spain	5/3/19	5/2/20
	Tijuana	4/12/19	4/11/20		Victoria DCI	1/18/19	6/30/20		Portage Cel	6/30/17	7/31/20
	Hutchinson	1/19/18	1/31/20		Virginia Beach AMSC	6/30/18	12/31/19		Regina	2/17/17	12/31/19
	AirRacer				Davenport Put	11/1/19	10/31/20		Richmond SMV	2/18/17	12/31/19
	AIWC										

Film	Theater	Open	Close	Film	Theater	Open	Close	Film	Theater	Open	Close
DSC Everest	Saint Augustine	2/17/17	6/30/20	Edmonton TWS	9/15/19	9/14/20	JTTSP	KSC 1	2/27/15		
	Sioux Falls	6/2/17	5/30/20	Fort Lauderdale	2/15/19	2/14/20		Tallahassee CLC	6/22/18	6/21/21	
	Thessaloniki SCTM	10/28/17	10/11/20	Fort Worth	7/26/19	7/25/20		Thessaloniki SCTM	12/14/18	1/13/20	
	Vancouver TWS	3/4/17	6/30/20	Galveston	8/30/19	8/18/20		Washington NASM	3/6/15		
	Victoria DCI	3/17/17	12/31/19	Gatineau	7/2/19	7/1/20		Edmonton TWS	1/16/15		
	Washington NASM	2/17/17	2/16/20	Hague	10/15/19	10/15/20		Monterrey Pap	6/10/16	12/31/19	
	Portland OMSI ET	6/13/19	6/14/21	Harrisburg	2/15/19	2/14/20		Norwalk MA	7/1/14	12/31/19	
	Gatineau	7/30/18	3/30/20	Houston MNS	1/18/19	1/17/20		Speyer Dome	5/25/17	12/31/19	
	Hague	9/1/19		Jersey City	3/15/19	3/14/20		Davenport Put		4/26/20	
	Kapurthala	6/15/18	6/14/20	Kansas City Sci	7/4/19	7/3/20		Fort Worth	9/1/03	12/31/23	
ExpChesa	Baltimore MSC	10/1/19	9/30/21	Lubbock SS	10/18/19	10/17/20	Louisville KSC	7/2/18	7/2/20		
	Galveston	10/1/19	9/30/21	Milwaukee	9/1/19	9/27/20	Portland OMSI ET	7/21/15	10/11/21		
ExtrWeat	Harrisburg	3/20/19	12/31/21	Montreal SC	10/1/19	9/30/20	Raleigh	1/1/15	7/2/20		
	Virginia Beach AMSC	9/3/19	10/12/21	Orlando SC	2/23/19	2/22/20	Sacramento Imx	7/1/15	12/31/19		
	Baltimore MSC	3/1/19	6/30/21	Phoenix ASC	10/12/19	10/11/20	Saint Augustine		6/14/20		
	Calgary TS	9/1/17	9/1/20	Raleigh	3/1/19	2/28/20	San Diego RHF		4/3/20		
	Davenport Put	10/15/16	10/14/20	Regina	2/15/19	10/10/20	Sioux Falls	10/25/16	11/18/21		
	Edmonton TWS	6/2/17	6/1/20	Saint Augustine	2/15/19	2/14/20	Chantilly	5/1/15			
	Kansas City Sci	10/15/16	12/31/21	Saint Louis SC	11/29/19	11/28/20	Davenport Put	7/1/16	10/1/20		
	Lodz CC	10/15/19	10/31/20	Seattle PSC 2	5/3/19	5/2/20	Edmonton TWS	1/1/19	12/31/19		
	Louisville KSC	10/14/19	10/14/21	Singapore SC	3/16/19	3/15/20	London BFI Ode	10/16/15			
	Melbourne MV	4/1/19	3/31/20	Sudbury	2/15/19	6/30/20	McMinnville	4/10/15	5/30/21		
FlyMons	Memphis Pink	3/24/17	8/31/21	Tijuana	2/22/19	2/22/20	Washington NASM	4/10/15			
	Peoria RM	10/15/16	10/21/21	Toronto OSC	2/15/19	2/14/20	Albuquerque NMMNH	2/11/19	2/10/20		
	Philadelphia FI	2/11/17	12/31/19	Vancouver TWS	2/15/19	2/14/20	Atlanta FMNH	2/9/18	2/8/20		
	Pittsburgh CSC	11/17/17	12/31/20	Victoria DCI	2/15/19	2/14/20	Melbourne MV	1/30/17	1/28/20		
	Raleigh	10/17/16	10/15/21	Yellowstone	5/17/19	5/16/20	Tallahassee CLC	8/14/18	8/13/20		
	Sacramento Imx	2/24/17	10/14/20	Grand Canyon DCI	11/1/99	12/19	Victoria DCI	11/24/17	4/15/21		
	Saint Augustine	10/15/16	10/30/20	Grand Rapids Cel	9/1/18	7/31/20	Davenport Put	6/1/17	5/31/20		
	Saint Louis SC	1/13/17	12/31/19	Lansing Cel	5/1/19	7/31/20	Edmonton TWS	1/1/19	12/31/19		
	Salt Lake City Clark	10/24/16	11/18/21	Portage Cel	9/1/18	7/31/20	Parker	12/1/19	11/30/20		
	San Jose Tech	10/15/16	10/30/21	Richmond SMV	6/1/16	12/31/19	Sioux Falls	6/1/18	12/31/20		
FOTB	Sioux Falls	2/1/17	3/31/20	GlobSoun	Charlotte DP	11/1/17	10/1/20	MOC	Kansas City Sci	10/24/19	4/30/20
	Tallahassee CLC	5/19/17	5/1/20		Des Moines	10/1/16	9/1/20		Memphis Pink	2/9/19	5/22/20
	Wroclaw CC	10/15/19	10/31/20		Edmonton TWS	10/1/16	6/4/20		Mobile	1/25/19	1/31/20
	Charlotte DP	5/26/18	12/31/19		Mobile	10/18/17	10/31/20		Tallahassee CLC	5/1/19	1/1/20
	Davenport Put	3/27/14	6/1/20		Seattle PSC 1	10/1/16	12/31/20		Victoria DCI	8/30/19	9/15/20
	Kenner	6/4/16	6/3/21		Vancouver TWS	10/1/16	2/5/20		Pensacola NAM	11/8/96	
	Killeen	9/15/17	9/15/20		Gatineau	10/7/16	3/31/20		Speyer Dome		12/31/19
	Orlando SC	5/16/19	12/31/19		Hutchinson	7/1/17	12/31/19		Columbus COSI	11/21/14	12/31/20
	Hague	10/4/12	10/3/20		San Jose Tech	10/31/18	1/31/20		Copenhagen TBP	6/19/14	6/18/20
	Harrisburg	2/28/19	2/27/21		Syracuse MOST	6/1/19	6/1/20		Gatineau	1/15/16	3/31/20
FMTTM FON	Louisville KSC	6/18/15	7/2/20	HCBTD HiddPac	San Simeon DCI	8/17/96		Hague	10/1/15	12/19	
	Melbourne MV	9/1/15	3/31/20		Alamogordo	6/28/19	6/30/20	Kuwait SCK	1/30/14	8/31/20	
	Portland OMSI ET	3/8/19	3/7/21		Boston NEA	6/28/19	6/30/20	Melbourne MV	3/24/14	12/31/19	
	Raleigh	2/1/12	10/21		Chicago MSI	5/24/19	5/31/20	Mumbai Gha INOX	1/1/18	12/31/19	
	San Diego RHF	11/14	4/20		Lehi	6/28/19	6/30/20	Parker	1/30/19	1/29/20	
	Austin TSHM	1/11/13	3/31/20		Mobile	10/24/19	10/31/20	Pittsburgh CSC	11/17/17	12/31/20	
	Baton Rouge LASM	9/1/15	6/30/20		New Orleans	5/9/19	5/31/20	San Diego RHF	11/8/13	4/3/20	
	Davenport Put	2/15/13	6/30/20		Peoria RM	11/1/19	10/31/20	Tallahassee CLC	3/17	3/20	
	Dearborn THF	2/8/17	1/31/20		Seattle PSC 2	10/4/19	10/31/20	Victoria DCI	10/9/15	12/31/20	
	Edmonton TWS	12/26/13	6/30/20		Glasgow		2/28/20	Louisville KSC	6/14/19	6/13/20	
G3DNW	Gatineau	10/5/12	6/30/20	HidUniv	Grand Rapids Cel	5/2/19	7/31/20	Baton Rouge LASM	3/1/17	3/31/21	
	Harrisburg	2/2/14	6/30/20		Hampton VASC	9/7/18	12/31/19	Cincinnati MC	2/1/19	12/31/19	
	Hastings	3/17/13	6/30/20		Lansing Cel	7/1/18	7/31/20	Peoria RM	10/16/18	10/31/20	
	Houston MNS	10/4/12	12/31/20		Port of Spain	10/3/19	10/2/20	Phoenix ASC	2/6/19	2/28/20	
	Lehi	1/19/19	9/19/20		Portage Cel	5/2/19	7/31/20	ND			
	London BFI Ode	9/6/13	6/30/20		Tallahassee CLC	2/1/19	2/28/20	Niagara			
	Louisville KSC	9/30/12	6/30/20		New Orleans	9/15/15	12/31/19	Niagara NY DCI	7/1/86	5/1/07	
	Melbourne MV	3/21/13	9/13/20		Berlin CS	6/3/19	6/3/20	Boston MOS	2/12/16	1/6/20	
	Memphis Pink	3/1/14	5/31/20		Boston MOS	2/13/15	12/31/19	Branson	3/18/16	4/12/20	
	Portland OMSI ET	1/7/14	6/30/20		Cincinnati MC	2/1/19	2/1/21	Carnival Horizon	4/1/18	10/6/20	
GBR3D	Raleigh	10/19/17	6/30/20	Hurrican	Edmonton TWS	10/2/15		Carnival Vista	1/14/16	6/6/20	
	Richmond SMV	5/1/13	6/30/20		Grand Rapids Cel	9/1/18	7/31/20	Chattanooga TA	2/12/16	4/1/20	
	Sacramento Imx	8/13/13	6/30/20		Hangzhou LCSTM	6/1/19	5/31/20	Cincinnati MC	1/1/19	2/1/21	
	Saint Augustine	1/18/13	12/31/20		Hyderabad	12/10/18	12/11/20	Cleveland	7/1/17	3/31/20	
	San Diego RHF	10/12/12	6/30/20		Indianapolis Imx	8/17/16	10/29/20	Columbus COSI	3/8/18	9/3/20	
	Victoria DCI	4/5/13	6/30/20		Lansing Cel	6/1/19	7/31/20	Dearborn THF	3/25/16	7/1/20	
	Berlin CS	4/20/14	12/31/19		Pittsburgh CSC	6/17/16	12/31/20	Dongguan STM	1/25/17	12/31/19	
	Budapest CC	9/19/19	9/19/20		Portage Cel	9/1/18	7/31/20	Edmonton TWS	2/12/16	10/22/20	
	Davenport Put	1/29/19	10/20/20		Richmond SMV	3/14/15	12/31/19	Fort Worth	2/12/16	6/30/20	
	Fort Lauderdale	9/26/19	6/25/20		Sacramento Imx	8/19/16	10/29/20	Grand Rapids Cel	10/1/18	7/31/20	
GBRF	Katowice CC	6/18/14	9/30/20	IncrPred	Tallahassee CLC	1/1/19	2/28/20	Harrisburg	7/1/16	7/2/20	
	Krakow CC	6/18/14	9/30/20		Monterrey Pap	6/29/19	1/10/20	Hartberg	6/1/19	6/1/21	
	Lodz CC	6/18/14	9/30/20		Nassau Fus	10/1/19	9/30/21	Houston MNS	7/1/18	12/31/19	
	Melbourne MV	4/11/19	4/10/20		Atlanta FMNH	9/30/17	12/31/19	Lansing Cel	10/1/18	7/31/20	
	Moscow Kin	10/6/14	5/5/21		Albuquerque NMMNH	9/1/19	8/31/20	London BFI Ode	2/12/16	7/31/20	
	Poznan CC	6/18/14	9/30/20		Dearborn THF	7/1/19	6/30/20	Moscow Kin	9/17/16	11/30/21	
	Prague CC	5/22/14	9/30/20		Hastings	9/1/19	8/31/20	Pittsburgh CSC	2/12/16	12/31/20	
	Warsaw CC	6/18/14	9/30/20		Edmonton TWS	12/26/13	6/30/20	Portage Cel	10/1/18	7/31/20	
	Wroclaw CC	10/4/17	9/30/20		Fort Worth	3/21/16	10/24/22	Raleigh	2/27/16	12/31/19	
	JMCISO JTM JTS	Alexandria BA	1/30/19		1/29/20	Jerusale	Galveston	11/1/19	4/30/20	Richmond SMV	4/10/16
Atlanta FMNH		12/15/18	12/14/19	Hague	3/31/14		12/31/19	Rochester MSC	8/2/19	1/1/20	
Chattanooga TA		5/24/19	5/23/20	Jersey City	9/1/18		8/31/20	Sacramento Imx	2/19/16	3/25/20	
Edmonton TWS		7/1/18	9/14/20	London BFI Ode	1/1/14		12/31/19	Shreveport	3/15/19		
Houston MNS		3/8/19	3/15/21	Louisville KSC	1/20/14		7/20/20	Sinsheim	3/4/16	7/31/20	
Jersey City		11/23/18	12/31/19	McMinnville	9/27/13		11/30/20	Vancouver TWS	2/12/16	6/30/20	
Milwaukee		3/30/19	6/30/20	Pittsburgh CSC	11/17/17		12/31/19	Hutchinson	11/22/19	11/21/20	
Norwalk MA		12/14/19	9/7/20	Sacramento Imx	9/15/14		10/23/20	Athens Eug	3/1/19	3/31/20	
Port of Spain		1/30/19	1/29/20	San Diego RHF	11/20/15		4/3/20	Garza Garcia	10/30/19	2/29/20	
Saint Augustine		8/20/18	8/19/20	Speyer Dome	12/12/13		12/11/19	New York AMNH	7/1/19	1/5/20	
JMCISO JTM JTS	Atlanta FMNH	5/3/19	4/30/20	JMCISO JTM JTS	Harbin STM	12/1/18	12/1/19	Portland OMSI ET	4/20/18	4/30/20	
	Beijing 3D CSTM	5/2/19	5/5/20		Kuwait SCK	7/26/19	8/31/20	Stockholm	2/22/19	2/21/20	
	Boston MOS	7/5/19	1/6/20		Al Khobar	6/1/19	6/1/20	Sudbury	3/9/19	6/30/20	
	Calgary TS	10/18/19	4/18/20		Dayton	3/6/15	12/1/19	Tallahassee CLC	6/7/19	12/31/20	
	Cleveland	11/1/19	11/1/20		Hampton VASC	2/21/15	2/20/20	Virginia Beach AMSC	1/1/19	1/31/20	

Film	Theater	Open	Close	Film	Theater	Open	Close	Film	Theater	Open	Close
Pandas	Shreveport	3/15/19			Indianapolis Imx	3/15/19			KSC 1	5/11/19	4/30/20
Penguins	Atlanta FMNH	1/31/19	2/1/20		Jersey City	6/24/19			McMinnville	1/1/19	12/31/20
PlanPowe	Dearborn THF	10/1/19	9/30/20		Kansas City Sci	6/14/19			Columbus COSI	9/21/19	2/28/20
	Poitiers Imax	2/9/19	2/8/20		Kaohsiung NSTM	7/1/19			Denver MNS	8/22/19	8/21/20
	Sinsheim	3/28/19	3/27/20		Los Angeles CSC	3/15/19			Edmonton TWS	6/21/19	9/23/20
	Valencia Spn	1/7/19	6/30/20		Louisville KSC	3/15/19			Hastings	9/13/18	6/30/20
PTJH	Aguascalientes	10/1/19	3/27/20		Lubbock SS	3/10/19			Kuwait SCK	11/1/19	4/6/20
	Charleston CCAS	1/1/19	1/1/21		Melbourne MV	6/1/19			Melbourne MV	5/12/18	12/31/20
	Louisville KSC	7/4/14	7/20/20		Memphis Pink	9/14/19			Omaha Zoo	9/1/19	2/28/20
	Vantaa	1/27/17	1/26/20		Mobile	5/4/19			Sacramento Imx	9/21/18	5/31/20
RobotsNG	Bogota Mal	6/1/19	5/31/20		Montreal SC	5/15/19			Sioux Falls	9/1/18	1/31/20
	Dearborn THF	3/25/16	1/31/20		Moscow Kin	8/29/19			Sudbury	12/7/18	6/30/20
	Hampton VASC	6/20/15	6/18/21		Norwalk MA	3/15/19			Katowice CC		9/30/20
	Hutchinson	5/20/16	6/11/21		Omaha Zoo	5/1/19			Krakow CC		9/30/20
	San Jose Tech	10/3/15	10/31/20		Orlando SC	4/1/19			Lodz CC		9/30/20
SeaRex	Phoenix ASC	11/17/19	5/25/20		Peoria RM	3/30/19			Poznan CC		9/30/20
SFLIS	Beijing 3D CSTM	1/1/19	6/30/20		Philadelphia FI	4/13/19			Warsaw CC		9/30/20
	Jersey City	11/2/19	11/1/20		Pittsburgh CSC	11/23/19	11/23/20		Wroclaw CC		9/30/20
	Philadelphia FI	2/2/19	2/2/21		Portland OMSI ET	3/15/19			Gatineau	7/30/18	3/30/20
	Victoria DCI	9/22/17	12/31/19		Quantico	5/10/19			Albuquerque NMMNH	10/15/18	10/14/20
SOB3D	Hartberg	12/25/19	12/24/20		Raleigh	3/15/19			Atlanta FMNH	9/6/19	9/5/20
SOE	Al Khobar	7/1/19	7/1/20		Regina	3/15/19			Boston MOS	1/19/18	
	Hong Kong SM	1/1/19			Richmond SMV	10/1/19			Charlotte DP	3/28/19	12/31/20
	Melbourne MV	7/1/19	7/1/20		Sacramento Imx	3/15/19			Chattanooga TA	6/28/19	3/26/20
SOTU	Chantilly	7/12/19	7/12/20		Saint Augustine	8/19/19			Chicago MSI	3/19	
	Chicago MSI	8/2/19	5/25/20		Saint Louis SC	3/15/19			Cincinnati MC	12/28/18	12/31/21
	Sacramento Imx	12/1/19	12/1/21		Saint Paul SMM	10/17/19			Denver MNS	1/24/19	1/23/20
	Salt Lake City Clark	8/17/19	8/16/20		Salt Lake City Clark	3/30/19	3/29/20		Edmonton TWS	10/12/18	6/30/20
	Valencia Spn	10/1/19	10/1/20		San Diego RHF	3/15/19			Garden City	10/1/19	9/30/20
	Washington NASM	7/12/19	7/12/20		San Jose Tech	3/22/19			Gatineau	6/1/19	1/6/20
SpaceNex	Beijing 3D CSTM	4/1/19	3/31/20		Seattle PSC 2	3/15/19			Hong Kong SM	9/1/19	4/30/20
	Hutchinson	9/8/17	3/31/20		Shreveport	3/15/19			Jersey City	12/26/19	12/25/20
	McMinnville	10/1/18	10/31/20		Sioux Falls	6/1/19			Kagoshima MSC	12/18	
	Singapore SC	5/15/18	5/15/21		Stockholm	10/25/19	10/25/20		Kuwait SCK	6/4/19	12/31/19
SpacJunk	Hutchinson	10/31/14	11/30/20		Sudbury	3/1/15			Los Angeles CSC	1/16/19	12/31/19
	Shanghai 3D STM	2/1/19	2/1/20		Syracuse MOST	4/15/19			Lubbock SS	7/5/19	1/30/20
SupDogs	Albuquerque NMMNH	4/19/19			Tallahassee CLC	3/15/19			Melbourne MV	3/21/19	3/20/20
	Atlantic City	3/15/19			Tijuana	7/21/19			Milwaukee	9/1/19	8/31/21
	Baltimore MSC	7/1/19			Toronto OP	7/1/19			Montreal SC	2/14/19	12/31/19
	Birmingham AL	3/15/19			Toronto OSC	4/12/19			Philadelphia FI	9/15/19	9/30/20
	Bradford	4/12/19			Vancouver TWS	5/1/19			Phoenix ASC	2/22/19	6/30/20
	Branson	3/15/19			Victoria DCI	5/1/19			Portland OMSI ET	10/13/18	12/31/20
	Carnival Horizon	3/15/19			Virginia Beach AMSC	5/15/19			Richmond SMV	6/1/19	5/31/20
	Carnival Vista	3/15/19			Washington NASM	3/15/19			Saint Louis SC	5/17/19	
	Chantilly	3/15/19			Portland OMSI ET	1/26/18	1/31/20		Saint Paul SMM	9/19	
	Charleston CCAS	7/15/19		TA	Harrisburg	2/1/18	3/31/21		Salt Lake City Clark	1/16/19	2/15/20
	Charlotte DP	3/15/19		TinyGian	Memphis Pink	11/17/18	5/22/20		San Diego RHF	11/9/18	
	Chattanooga TA	10/11/19	10/15/20		Peoria RM	6/30/18	6/30/20		San Jose Tech	8/15/19	8/14/20
	Chicago NP AMC	3/15/19		TOTIA	Hutchinson	7/1/17	12/31/19		Shanghai 3D STM	10/19	10/20
	Cincinnati MC	11/15/19	11/14/20		Phoenix ASC	12/1/18	12/31/19		Toronto OSC	10/11/19	4/30/21
	Cleveland	6/15/19		TSAB	Huntsville USSRC	5/1/19	4/30/20		Valencia Spn	10/1/19	12/31/20
	Columbus COSI	3/15/19			Philadelphia FI	1/1/17	1/1/21		Victoria DCI	1/18/19	6/30/20
	Davenport Put	3/15/19		TTA	Glasgow	4/1/15	5/20/20		Melbourne MV	1/4/18	2/1/21
	Dearborn THF	3/15/19			Grand Rapids Cel	6/2/18	7/31/20		Portland OMSI ET	1/26/18	1/31/20
	Denver MNS	3/15/19			Hyderabad	11/15/18	11/30/20		Richmond SMV	2/1/17	
	Edmonton TWS	3/15/19			Lansing Cel	6/1/18	7/31/20		Hastings	9/2/19	1/2/20
	Fort Lauderdale	4/19/19			Moscow Kin	11/1/16	11/30/21		Louisville KSC	2/8/14	12/31/19
	Fort Worth	3/15/19			Portage Cel	6/1/18	7/31/20		San Diego RHF	12/7/18	12/31/19
	Hague	6/18/19			Tallahassee CLC	2/1/19	2/28/20		Quantico	7/31/17	
	Hampton VASC	3/15/19		TTS	Copenhagen TBP	4/14/19	4/13/20		Monterrey Pap	10/19/19	2/15/20
	Hastings	3/15/19			Hong Kong SM	7/1/19	9/30/21		Portland OMSI ET	1/26/18	1/31/20
	Houston MNS	4/26/19			Huntsville USSRC	5/1/19	12/31/20		Yellowstone	5/1/14	12/31/20

December 2019 by Theater

Theater	Film	Open	Close	Theater	Film	Open	Close	Theater	Film	Open	Close		
Aguascalientes	AMJ	4/5/19	12/31/19		DreamBig	2/17/17	3/1/20	Branson	DreamBig	1/1/18	12/31/19		
	Cuba	10/25/19	3/25/20		ExpChesa	10/1/19	9/30/21		SupDogs	4/12/19			
	DinoAliv	4/13/19	4/30/20		ExtrWeat	3/1/19	6/30/21		A11FSE	6/14/19	6/13/20		
	PTJH	10/1/19	3/27/20		SupDogs	7/1/19			NPA	3/18/16	4/12/20		
Al Khobar	JTS	6/1/19	6/1/20	Baton Rouge LASM	A11FSE	7/6/19	7/5/20		SupDogs	3/15/19			
	SOE	7/1/19	7/1/20		AMJ	5/25/19	5/24/20		Budapest CC	G3DNW	9/19/19	9/19/20	
Alamogordo	HiddPac	6/28/19	6/30/20		DreamBig	6/30/17	12/31/19	Calgary TS	ExtrWeat	9/1/17	9/1/20		
Albuquerque NMMNH	ISR	9/1/19	8/31/20		FOTB	9/1/15	6/30/20			GBRF	10/18/19	4/18/20	
	MA	2/1/19	2/10/20	Beijing 3D CSTM	Mummies	3/1/17	3/31/21	Carnival Horizon	NPA	4/1/18	10/6/20		
	SupDogs	4/19/19			BackWild	11/1/19	8/5/20			SupDogs	3/15/19		
	Volcanoes	10/15/18	10/14/20			GBRF	5/2/19	5/5/20	Carnival Vista	NPA	11/4/16	6/6/20	
Alexandria BA	GBR3D	1/30/19	1/29/20			SFLIS	1/1/19	6/30/20			SupDogs	3/15/19	
	OOBP	3/1/19	3/31/20	Berlin CS	SpaceNex	4/1/19	3/31/20	Chantilly	A11FSE	5/17/19	5/17/29		
Athens Eug	A11FSE	6/1/19	5/30/20			G3DNW	4/20/14		12/31/19		DreamBig	2/17/17	2/16/20
	AsterME	1/1/18	1/10/20		Birmingham AL	HumpbWha	6/3/19		6/3/20		LITAOA	5/1/15	
Atlanta FMNH	GBR3D	12/15/18	12/14/19			A11FSE	5/19/19	5/18/20	Charleston CCAS	SOTU	7/12/19	7/12/20	
	GBRF	5/3/19	4/30/20			SupDogs	3/15/19				SupDogs	3/15/19	
	IncrPred	9/30/17	12/31/19	Bogota Mal	RobotsNG	6/1/19	5/31/20	Charlotte DP		PTJH	1/1/19	1/1/21	
	MA	2/9/18	2/8/20	Boston MOS	Cuba	2/15/19	2/29/20			SupDogs	7/15/19		
	Penguins	1/31/19	2/1/20		GBRF	7/5/19	1/6/20		Cuba	9/1/19	9/1/20		
	Volcanoes	9/6/19	9/5/20		HumpbWha	2/13/15	12/31/19		DreamBig	8/26/17	12/31/19		
Atlantic City	SupDogs	3/15/19			NPA	2/12/16	1/6/20		FlyMons	5/26/18	12/31/19		
Austin Reg	AMJ	3/1/19	6/1/20		Volcanoes	11/9/18			GlobSoun	11/1/17	10/1/20		
Austin TSHM	A11FSE	9/1/19	8/30/20	Boston NEA	AGWN	7/1/19	2/15/20		SupDogs	3/15/19			
	FOTB	1/1/13	3/31/20			HiddPac	6/28/19	6/30/20		Volcanoes	3/28/19	12/31/20	
Baltimore MSC	BackWild	3/1/19	6/30/20	Bradford	A11FSE	5/17/19	5/16/20	Chattanooga TA	A11FSE	6/14/19	6/13/20		

Theater	Film	Open	Close	Theater	Film	Open	Close	Theater	Film	Open	Close
Chicago MSI	BackWild	3/16/18	6/30/20	Galveston	DreamBig	2/17/17	6/30/20	Hyderabad	TOTIA	7/1/17	12/31/19
	GBR3D	5/24/19	5/23/20		GBRF	7/26/19	7/25/20		HumpbWha	12/10/18	12/11/20
	NPA	2/12/16	4/1/20		Jerusale	3/21/16	10/24/22		TTA	11/15/18	11/30/20
	SupDogs	10/11/19	10/15/20		L&C	9/1/03	12/31/23	Indianapolis Imx	A11FSE	7/12/19	7/1/20
	Volcanoes	6/28/19	3/26/20		NPA	2/12/16	6/30/20		AmazAdve	9/8/17	5/31/20
	A11FSE	5/24/19	5/23/20		SupDogs	3/15/19			DreamBig	1/17/19	1/16/20
	Cuba	3/1/19	3/31/20		Cuba	3/9/19	3/31/20		HumpbWha	8/17/16	10/29/20
	HiddPac	5/24/19	5/31/20		ExpChesa	10/1/19	9/30/21		SupDogs	3/15/19	
	SOTU	8/2/19	5/25/20		GBRF	8/30/19	8/18/20	Jersey City	DreamBig	2/17/17	11/15/20
	Volcanoes	3/1/19			Jerusale	11/1/19	4/30/20		GBR3D	11/23/18	12/31/19
	SupDogs	3/15/19		Garden City	A11FSE	5/21/19	5/20/20		GBRF	3/15/19	3/14/20
Chicago NP AMC Cincinnati MC	A11FSE	9/28/19	9/27/20		AsterME	5/19/17	6/18/20		Jerusale	9/1/18	8/31/20
	HumpbWha	2/1/19	2/1/21		DreamBig	12/1/17	12/31/19		SFLIS	11/2/19	11/1/20
	Mummies	2/1/19	12/31/19		Volcanoes	10/1/19	9/30/20		SupDogs	6/24/19	
	NPA	1/1/19	2/1/21	Garza Garcia Gatineau	OOBP	10/30/19	2/29/20		Volcanoes	12/26/19	12/25/20
	SupDogs	11/15/19	11/14/20		Arabia	4/24/18	3/30/20	Kagoshima MSC	A11FSE	7/1/19	12/31/19
	Volcanoes	12/28/18	12/31/21		BackWild	6/1/18	3/31/20		Volcanoes	12/18	12/19
	A11FSE	5/18/19	5/17/20		Cuba	2/1/19	2/28/20	Kansas City Sci	ExtrWeat	10/15/16	12/31/21
	AmazAdve	1/9/18	6/30/20		D-Day	9/1/15	12/31/20		GBRF	7/4/19	7/3/20
Cleveland	AMJ	3/23/18	3/31/20		Dolphins	7/9/18	3/20/20		MOC	10/24/19	4/30/20
	DreamBig	3/17/17	3/31/20		Everest	7/30/18	3/30/20	Kaohsiung NSTM Kapurthala	SupDogs	6/14/19	
	GBRF	11/1/19	11/1/20		FOTB	10/5/12	6/30/20		SupDogs	7/1/19	
	NPA	7/1/17	3/31/20		GBRF	7/2/19	7/1/20		AMJ	6/15/18	6/14/20
	SupDogs	6/15/19			GWS	10/7/16	3/31/20		Everest	6/15/18	6/14/20
Columbus COSI	Bugs	9/15/14	6/30/20		MOTUW	1/15/16	3/31/20		AfricAdv		9/30/20
	MOTUW	11/21/14	12/31/20	Glasgow	VanGogh	7/30/18	3/30/20		G3DNW	6/18/14	9/30/20
	NPA	3/8/18	9/3/20		Volcanoes	6/1/19	1/6/20		TurtTale		9/30/20
	SupDogs	3/15/19			AmazAdve	4/12/19	4/14/20	Kenner	FlyMons	6/4/16	6/3/21
	TurtOdy	9/21/19	2/28/20		HideUniv		2/28/20		FlyMons	9/15/17	9/15/20
Columbus GA NIM Copenhagen TBP	D-Day	1/31/18	12/1/19		TTA	4/1/15	5/20/20		AsterME	1/1/19	12/31/20
	A11FSE	6/12/19	6/11/20	Grand Canyon DCI Grand Rapids Cel	GC	11/1/99	12/19		Dolphins	3/1/19	12/1/19
	MOTUW	6/19/14	6/18/20		DreamBig	7/15/17	7/31/20	Krakow CC	AfricAdv		9/30/20
	TTS	4/14/19	4/13/20		GCA	9/1/18	7/31/20		G3DNW	6/18/14	9/30/20
	ACGOTS	6/17/16			HideUniv	5/2/19	7/31/20		TurtTale		9/30/20
Corpus Christi Lex Davenport Put	A11FSE	7/13/19	7/12/20		HumpbWha	9/1/18	7/31/20		JTS	2/27/15	
	BFTB	11/1/19	10/31/20		NPA	10/1/18	7/31/20	KSC 1	TTT	5/1/19	4/30/20
	Bugs	10/1/12	4/28/20		TTA	6/2/18	7/31/20		A11FSE	5/17/19	12/31/19
	DreamBig	2/24/17	3/31/20	Guangzhou GSC Guayaquil	BackWild	5/1/19	5/1/20		AmazAdve	6/14/18	3/31/20
	ExtrWeat	10/15/16	10/14/20		AMJ	4/16/19	4/15/20		BackWild	8/10/19	2/10/20
Dayton	FlyMons	3/27/14	6/1/20		BackWild	4/3/19	3/31/20		DreamBig	6/25/17	8/31/20
	FOTB	2/15/13	6/30/20	Hague	A11FSE	5/21/19	1/30/20		JTM	7/26/19	8/31/20
	G3DNW	1/29/19	10/20/20		BackWild	2/12/19	2/11/20		MOTUW	1/30/14	8/31/20
	L&C		4/26/20		Everest	9/1/19			TurtOdy	11/1/19	4/6/20
	LITAOA	7/1/16	10/1/20		FON	10/4/12	10/3/20	Lansing Cel	Volcanoes	6/4/19	12/31/19
	Meerkats	6/1/17	5/31/20		GBRF	10/15/19	10/15/20		DreamBig	6/30/17	7/31/20
Dearborn THF	SupDogs	3/15/19			Jerusale	3/31/14	12/31/19		GCA	5/1/19	7/31/20
	A11FSE	5/25/19	5/24/20		MOTUW	10/1/15	12/19		HideUniv	7/1/18	7/31/20
	ACGOTS	6/17/16	12/31/19	Hampton VASC	SupDogs	6/18/19			HumpbWha	6/1/19	7/31/20
	D-Day	5/26/17	12/31/19		A11FSE	6/15/19	6/14/20		NPA	10/1/18	7/31/20
	JTS	3/6/15	12/1/19		DreamBig	2/17/17	6/14/20	Lehi	TTA	6/1/18	7/31/20
	A11FSE	6/17/19	6/16/20		HideUniv	9/7/18	12/31/19		AMMM	9/6/19	9/5/20
	AMJ	2/16/18	2/18/20		JTS	2/21/15	2/20/20		BackWild	5/24/18	5/24/20
	BackWild	8/1/18	2/29/20		RobotsNG	6/20/15	6/18/21		FOTB	1/19/19	9/19/20
	DreamBig	2/17/17	7/1/20		SupDogs	3/15/19		Lodz CC	HiddPac	6/28/19	6/30/20
	FOTB	2/8/17	1/31/20	Hangzhou LCSTM Harbin STM	HumpbWha	6/1/19	5/31/20		AfricAdv		9/30/20
Denver MNS	ISR	7/1/19	6/30/20		AGWN	12/1/18	12/1/19		ExtrWeat	10/15/19	10/31/20
	NPA	3/25/16	7/1/20		JMCOS	12/1/18	12/1/19		G3DNW	6/18/14	9/30/20
	PlanPowe	10/1/19	9/30/20	Harrisburg	DreamBig	2/18/17	3/1/20		TurtTale		9/30/20
	RobotsNG	3/25/16	1/31/20		ExpChesa	3/20/19	12/31/21	London BFI Ode	AmazAdve	3/29/19	3/31/20
	SupDogs	3/15/19			FON	2/28/19	2/27/21		AMMM	9/1/18	2/6/20
	A11FSE	5/17/19	5/16/20		FOTB	2/2/14	6/30/20		FOTB	9/6/13	6/30/20
Des Moines Dongguan STM	SupDogs	3/15/19			GBRF	2/15/19	2/14/20		Jerusale	1/1/14	12/31/19
	TurtOdy	8/22/19	8/21/20		NPA	7/1/16	7/2/20		LITAOA	10/16/15	
	Volcanoes	1/24/19	1/23/20	Hartberg	TinyGian	2/1/18	3/31/21		NPA	2/12/16	7/31/20
	GlobSoun	10/1/16	9/1/20		AMJ	4/6/19	4/15/20	London SM Los Angeles CSC	A11FSE	5/17/19	5/16/20
	AGWN	1/1/19	12/31/19		NPA	6/1/19	6/1/21		A11FSE	7/15/19	1/30/20
Edmonton TWS	NPA	1/25/17	12/31/19		SOB3D	12/25/19	12/24/20		BackWild	9/28/19	4/1/20
	AmazAdve	1/19/18	6/30/20	Hastings	BFTB	10/25/19	10/24/20		SupDogs	3/15/19	
	BackWild	11/8/19	11/7/20		FOTB	3/17/13	6/30/20	Louisville KSC	Volcanoes	1/16/19	12/31/19
	Bugs	6/30/18	6/30/20		ISR	9/1/19	8/31/20		BackWild	3/23/18	6/30/20
	Cuba	2/1/19	2/28/20		SupDogs	3/15/19			DreamBig	2/17/17	2/28/20
	D-Day	3/1/18	12/31/19		TurtOdy	9/13/18	6/30/20		ExtrWeat	10/14/19	10/14/21
	DreamBig	3/25/17	2/18/20		WildCats	9/2/19	1/2/20		FON	6/18/15	7/2/20
	ExtrWeat	6/2/17	6/1/20	Hong Kong SM	SOE	1/1/19			FOTB	9/30/12	6/30/20
	FOTB	12/26/13	6/30/20		TTS	7/1/19	9/30/21		Jerusale	1/20/14	7/20/20
	GBR3D	7/1/18	9/14/20		Volcanoes	9/1/19	4/30/20	Lubbock SS	L&C	7/2/18	7/2/20
	GBRF	9/15/19	9/14/20	Houston MNS	AmazAdve	4/21/17	12/31/19		MounQues	6/14/19	6/13/20
Fort Lauderdale	GlobSoun	10/1/16	6/4/20		DreamBig	2/17/17	1/7/21		PTJH	7/4/14	7/20/20
	HumpbWha	10/2/15			FOTB	10/4/12	12/31/20		SupDogs	3/15/19	
	Jerusale	12/26/13	6/30/20		GBR3D	3/8/19	3/15/21		WM	2/8/14	12/31/19
	JTTSP	1/16/15			GBRF	11/8/19	11/7/20	Melbourne MV	BFTB	12/6/19	12/2/20
	LITAOA	1/1/19	12/31/19		NPA	7/1/18	12/31/19		GBRF	10/18/19	10/17/20
	Meerkats	1/1/19	12/31/19	Huntsville USSRC	SupDogs	4/26/19			SupDogs	3/10/19	
	NPA	2/12/16	10/22/20		A11FSE	6/1/19	5/30/20		Volcanoes	7/5/19	1/30/20
	SupDogs	3/15/19			TSAB	5/1/19	4/30/20		A11FSE	5/24/19	12/31/19
	TurtOdy	6/21/19	9/23/20		TTS	5/1/19	12/31/20	McMinnville	Cuba	10/25/19	10/31/20
	Volcanoes	10/12/18	6/30/20		A11FSE	5/17/19	5/16/20		Jerusale	9/27/13	11/30/20
	BackWild	6/1/18	4/24/20	Hutchinson	AirRacer	1/19/18	1/31/20		LITAOA	4/10/15	5/30/21
	BFTB	10/25/19	10/24/20		Cuba	2/15/19	2/28/20		SpaceNex	10/1/18	10/31/20
	DreamBig	2/17/17	6/6/20		D-Day	12/31/17	1/31/20		TTS	1/1/19	12/31/20
Fort Worth	G3DNW	9/26/19	6/25/20		GWS	7/1/17	12/31/19		A11FSE	10/1/19	6/30/20
	GBRF	2/15/19	2/14/20		OOB	11/22/19	11/21/20		AMMM	7/1/16	
	SupDogs	4/19/19			RobotsNG	5/20/16	6/11/21		ExtrWeat	4/1/19	3/31/20
	A11FSE	5/17/19	5/16/20		SpaceNex	9/8/17	3/31/20		FON	9/1/15	3/31/20
	CRA	6/10/17	9/30/20		SpacJunk	10/31/14	11/30/20		FOTB	3/21/13	9/13/20

Theater	Film	Open	Close	Theater	Film	Open	Close	Theater	Film	Open	Close
Memphis Pink	G3DNW	4/11/19	4/10/20	Poitiers Imax Port of Spain	AMJ	1/25/19	1/24/20	San Diego RHF	SOTU	8/17/19	8/16/20
	MA	1/30/17	1/28/20		BackWild	8/31/18	12/31/20		SupDogs	3/30/19	3/29/20
	MOTUW	3/24/14	12/31/19		Cuba	11/1/19	10/31/20		Volcanoes	1/16/19	2/15/20
	SOE	7/1/19	7/1/20		D-Day	2/19/19	2/18/20		Bugs	7/1/14	6/30/20
	SupDogs	6/1/19			DreamBig	11/17/17	12/31/20		FON	11/14	4/20
	TurtOdys	5/12/18	12/31/20		ExtrWeat	11/17/17	12/31/20		FOTB	10/12/12	6/30/20
	Volcanoes	3/21/19	3/20/20		HumpbWha	6/17/16	12/31/20		Jerusale	11/20/15	4/3/20
	WildAfri	1/4/18	2/1/21		Jerusale	11/17/17	12/31/19		L&C		4/3/20
	A11FSE	5/25/19	5/24/21		MOTUW	11/17/17	12/31/20		MOTUW	11/8/13	
	Cuba	9/19/19	9/17/21		NPA	2/12/16	12/31/20		SupDogs	3/15/19	
Mexico City PAP Milwaukee	ExtrWeat	3/24/17	8/31/21	Portage Cel	SupDogs	11/23/19	11/23/20	San Jose Tech	Volcanoes	11/9/18	
	FOTB	3/1/14	5/31/20		PlanPowe	2/9/19	2/8/20		WOTA	12/7/18	12/31/19
	MOC	2/9/19	5/22/20		DreamBig	5/3/19	5/2/20		A11FSE	5/17/19	5/16/20
	SupDogs	9/14/19			GBR3D	1/30/19	1/29/20		BFTB	10/25/19	10/24/20
	TinyGian	11/17/18	5/22/20		HidUniv	10/3/19	10/2/20		D-Day	5/15/19	6/30/20
	AMJ	3/15/18	12/31/19		DreamBig	6/30/17	7/31/20		ExtrWeat	10/15/16	10/30/21
	DreamBig	7/10/17	6/30/21		GCA	9/1/18	7/31/20		GWS	10/31/18	1/31/20
	GBR3D	3/30/19	6/30/20		HidUniv	5/2/19	7/31/20		RobotsNG	10/3/15	10/31/20
	GBRF	9/1/19	9/27/20		HumpbWha	9/1/18	7/31/20		SupDogs	3/22/19	
	Volcanoes	9/1/19	8/31/21		NPA	10/1/18	7/31/20		Volcanoes	8/15/19	8/14/20
Mobile	GlobSoun	10/18/17	10/31/20	Portland OMSI ET	TTA	6/1/18	7/31/20	San Simeon DCI Seattle PSC 1 Seattle PSC 2	HCBTD	8/17/96	
	HiddPac	10/24/19	10/31/20		A11FSE	5/17/19	5/16/20		GlobSoun	10/1/16	12/31/20
	MOC	1/25/19	1/31/20		AGWN	3/1/19	2/29/20		A11FSE	5/31/19	7/18/20
	SupDogs	5/4/19			AmazAdve	2/16/18	2/16/20		AmazAdve	11/10/17	
	AMJ	3/15/18	4/15/20		AOTE	1/26/18	1/31/20		BFTB	12/20/19	12/19/21
	DreamBig	2/2/18	4/15/20		BackWild	9/7/18	6/30/20		Cuba	6/14/19	6/30/20
	Hurrican	6/29/19	1/10/20		DinoAliv	1/26/18	1/31/20		GBRF	5/3/19	5/2/20
	JTTSP	6/10/16	12/31/19		DSC	6/13/19	6/14/21		HiddPac	10/4/19	10/31/20
	WWDDPP3D	10/19/19	2/15/20		FON	3/8/19	3/7/21		SupDogs	3/15/19	
	GBRF	10/1/19	9/30/20		FOTB	1/7/14	6/30/20		Shanghai 3D STM	AGWN	1/1/19
Monterrey Pap	SupDogs	5/15/19		L&C	7/21/15	10/11/21	AMJ	7/24/19		7/23/20	
	Volcanoes	2/14/19	12/31/19	OOBP	4/20/18	4/30/20	BackWild	11/1/19		1/24/21	
	AMJ	4/15/18	4/16/20	SupDogs	3/15/19		SpacJunk	2/1/19		2/1/20	
	DreamBig	9/10/17	6/2/20	TA	1/26/18	1/31/20	Volcanoes	10/19		10/20	
	G3DNW	10/6/14	5/5/21	Volcanoes	10/13/18	12/31/20	A11FSE	7/4/19		7/3/20	
	NPA	9/17/16	11/30/21	WildAfri	1/26/18	1/31/20	NPA	3/15/19			
	SupDogs	8/29/19		WWDDPP3D	1/26/18	1/31/20	Pandas	3/15/19			
	TTA	11/1/16	11/30/21	AfricAdv		9/30/20	SupDogs	3/15/19			
	MOTUW	1/1/18	12/31/19	G3DNW	6/18/14	9/30/20	Singapore DC Singapore SC	Cuba		9/17/19	3/17/20
	Dolphins	3/1/19	12/1/19	TurtTale		9/30/20		GBRF	3/16/19	3/15/20	
Mumbai Gha INOX Mumbai NSC Nassau Fus	AMJ	10/30/19	10/30/21	Prague CC Quantico	G3DNW	5/22/14	9/30/20	Sinsheim	SpaceNex	5/15/18	5/15/21
	DreamBig	10/30/19	10/30/21		SupDogs	5/10/19			A11FSE	5/17/19	5/16/20
	Hurrican	10/1/19	9/30/21	WTM	7/31/17		NPA	3/4/16	7/31/20		
	ND			A11FSE	7/5/19	7/4/20	PlanPowe	3/28/19	3/27/20		
	HiddPac	5/9/19	5/31/20	BackWild	6/4/18	6/30/20	Sioux Falls	AmazAdve	12/2/17	5/31/20	
	HOTB	9/15/15	12/31/19	D-Day	5/23/14	2/28/20		AMJ	2/1/19	5/30/20	
	OOBP	7/1/19	1/5/20	ExtrWeat	10/17/16	10/15/21	BackWild	2/1/19	5/31/20		
	Niagara	7/1/86		FON	2/1/12	10/21	DreamBig	6/2/17	5/30/20		
	Niagara	5/1/07		FOTB	10/19/17	6/30/20	ExtrWeat	2/1/17	3/31/20		
	A11FSE	5/17/19	5/16/20	GBRF	3/1/19	2/28/20	L&C	10/25/16	11/18/21		
AmazAdve	5/17/19	5/16/20	Regina	L&C	1/1/15	7/2/20	Speyer Dome	Meerkats	6/1/18	12/31/20	
BackWild	3/24/18	6/30/20		NPA	2/27/16	12/31/19		SupDogs	6/1/19		
GBR3D	12/14/19	9/7/20		SupDogs	3/15/19		TurtOdys	9/1/18	1/31/20		
JTTSP	7/1/14	12/31/19		DreamBig	2/17/17	12/31/19	A11FSE	5/17/19	5/16/20		
SupDogs	3/15/19			GBRF	2/15/19	10/10/20	Dolphins	1/1/15	12/30/19		
BackWild	11/1/18	6/30/20		SupDogs	3/15/19		Jerusale	12/12/13	12/11/19		
SupDogs	5/1/19			AmazAdve	5/1/18	6/30/20	JTTSP	5/25/17	12/31/19		
TurtOdys	9/1/19	2/28/20		DreamBig	2/18/17	12/31/19	MOF		12/31/19		
A11FSE	7/1/19	6/30/20		FOTB	5/1/13	6/30/20	Stockholm	OOBP	2/22/19	2/21/20	
AGWN	9/1/19	3/31/20		GCA	6/1/16	12/31/19		SupDogs	10/25/19	10/25/20	
Orlando SC	AmazAdve	2/24/18	6/30/20	HumpbWha	3/14/15	12/31/19	Sudbury	BackWild	9/4/18	6/30/20	
	BackWild	11/1/18	6/30/20	NPA	4/10/16	12/31/19		GBRF	2/15/19	6/30/20	
	BFTB	11/8/19	11/7/20	SupDogs	10/1/19		OOBP	3/9/19	6/30/20		
	FMTTM	5/16/19	12/31/19	Volcanoes	6/1/19	5/31/20	SupDogs	3/11/15			
	GBRF	2/23/19	2/22/20	WildAfri	2/1/17		TurtOdys	12/7/18	6/30/20		
	SupDogs	4/1/19		NPA	8/2/19	1/1/20	AmazAdve	2/16/19	2/15/20		
	A11FSE	7/20/19	7/21/20	A11FSE	7/12/19	7/1/20	GWS	6/1/19	6/1/20		
	Meerkats	12/1/19	11/30/20	AIWC	5/1/15	6/10/20	SupDogs	4/15/19			
	MOTUW	1/30/19	1/29/20	AmazAdve	9/8/17	6/30/20	Taichung NMNS Tallahassee CLC	BackWild	7/1/19	6/30/20	
	A11FSE	5/17/19	5/16/20	ExtrWeat	2/24/17	10/14/20		A11FSE	7/12/19	7/11/20	
Pensacola NAM	ACGOTS	5/26/17	6/30/20	FOTB	8/13/13	6/30/20	AmazAdve	4/28/17	6/30/20		
	AMJ	2/26/19	2/27/20	HumpbWha	8/19/16	10/29/20	AMJ	2/16/18	2/28/20		
	MOF	11/8/96		Jerusale	9/15/14	10/23/20	BackWild	10/18/18	6/30/20		
	A11FSE	5/25/19	5/24/20	L&C	7/1/15	12/31/19	Cuba	1/18/19	6/30/20		
	AmazAdve	6/20/18	6/30/20	NPA	2/19/16	3/25/20	ExtrWeat	5/19/17	5/1/20		
	AMJ	2/16/18	2/17/20	SOTU	12/1/19	12/1/21	HidUniv	2/1/19	2/28/20		
	D-Day	4/2/15	2/28/20	SupDogs	3/15/19		HumpbWha	1/1/19	2/28/20		
	DreamBig	2/18/17	6/1/20	TurtOdys	9/21/18	5/31/20	JTS	6/22/18	6/21/21		
	ExtrWeat	10/15/16	10/21/21	BackWild	8/17/19	8/16/20	MA	8/14/18	8/13/20		
	Philadelphia FI	HiddPac	11/1/19	10/31/20	DreamBig	2/17/17	6/30/20	MOC	5/1/19	11/1/20	
Mummies		10/16/18	10/31/20	ExtrWeat	10/15/16	10/30/20	MOTUW	3/17	3/20		
SupDogs		3/30/19		FOTB	1/18/13	12/31/20	OOBP	6/7/19	12/31/20		
TinyGian		6/30/18	6/30/20	GBR3D	8/20/18	8/19/20	SupDogs	3/15/19			
A11FSE		5/17/19	5/17/20	GBRF	2/15/19	2/14/20	TTA	2/1/19	2/28/20		
DreamBig		3/1/18	12/31/19	L&C		6/14/20	Thessaloniki SCTM	DreamBig	10/28/17	10/11/20	
ExtrWeat		2/11/17	12/31/19	SupDogs	8/19/19			JTS	12/14/18	1/13/20	
SFLIS		2/2/19	2/2/21	Cuba	12/22/18	12/31/19	Tijuana	A11FSE	12/2/19	12/1/20	
SupDogs		4/13/19		ExtrWeat	1/13/17	12/31/19		AGWN	4/12/19	4/11/20	
Phoenix ASC		TSAB	1/1/17	1/1/21	GBRF	11/29/19	11/28/20	GBRF	2/22/19	2/22/20	
	Volcanoes	9/15/19	9/30/20	SupDogs	3/15/19		SupDogs	7/21/19			
	A11FSE	5/17/19	5/16/20	Volcanoes	5/17/19		ACGOTS	6/1/18	6/1/20		
	GBRF	10/12/19	10/11/20	A11FSE	5/17/19	5/11/20	SupDogs	7/1/19			
	Mummies	2/6/19	2/28/20	Cuba	3/1/19	3/1/20	Toronto OP	A11FSE	5/17/19	11/16/20	
	SeaRex	11/17/19	5/25/20	SupDogs	10/17/19			AmazAdve	10/6/17	6/30/20	
	TOTIA	12/1/18	12/31/19	Volcanoes	9/19		GBRF	2/15/19	2/14/20		
	Volcanoes	2/22/19	6/30/20	A11FSE	6/22/19	6/21/20	SupDogs	4/12/19			
	A11FSE	5/19/19	12/31/20	BFTB	11/16/19	11/15/20	Volcanoes	10/11/19	4/30/21		
	AmazAdve	11/17/17	12/31/20	ExtrWeat	10/24/16	11/18/21	Toulouse CDE	A11FSE	6/1/19	12/31/19	

Theater	Film	Open	Close	Theater	Film	Open	Close	Theater	Film	Open	Close
Valencia Spn	A11FSE	7/1/19	6/30/20	BFTB	11/22/19	11/21/20	Washington NASM	TurtTale		9/30/20	
	BackWild	4/1/19	6/30/20		ConqOTS	8/18/17	5/14/21	A11FSE	5/17/19	5/17/29	
	PlanPowe	1/7/19	6/30/20		Cuba	3/29/19	3/31/20	ACGOTS	5/26/17	5/25/20	
	SOTU	10/1/19	10/1/20		DreamBig	3/17/17	12/31/19	DreamBig	2/17/17	2/16/20	
	Volcanoes	10/1/19	12/31/20		FOTB	4/5/13	6/30/20	JTS	3/6/15		
Vancouver TWS	A11FSE	11/23/19	11/22/20	MA	2/15/19	2/14/20	Wroclaw CC	LITAOA	4/10/15		
	AmazAdve	12/22/17	6/30/20		MA	11/24/17	4/15/21	SOTU	7/12/19	7/12/20	
	DreamBig	3/4/17	6/30/20		MOC	8/30/19	9/15/20	SupDogs	3/15/19		
	GBRF	2/15/19	2/14/20		MOTUW	10/9/15	12/31/20	AfricAdv		9/30/20	
	GlobSoun	10/1/16	2/5/20		SFLIS	9/22/17	12/31/19	ExtrWeat	10/15/19	10/31/20	
Vantaa Victoria DCI	NPA	2/12/16	6/30/20	SupDogs	5/1/19		Yellowstone	G3DNW	10/4/17	9/30/20	
	SupDogs	5/1/19			Volcanoes	1/18/19	6/30/20	TurtTale		9/30/20	
	PTJH	1/27/17	1/26/20	Virginia Beach AMSC	BackWild	6/30/18	12/31/19	A11FSE	5/17/19	5/16/20	
	A11FSE	9/20/19	9/19/20		ExpChesa	9/3/19	10/12/21	GBRF	5/17/19	5/16/20	
	ACGOTS	5/3/19	5/31/20		OOBP	1/1/19	1/31/20	Yell	5/1/14	12/31/20	
Warsaw CC	AmazAdve	4/14/17	6/30/20		SupDogs	5/15/19					
	AMMM	4/16/18	4/15/21		AfricAdv		9/30/20				
	BackWild	1/18/19	6/30/20		G3DNW	6/18/14	9/30/20				

Key to Film Abbreviations

Film	Title	Year	Dist	Film	Title	Year	Dist
A11FSE	Apollo 11: First Steps Edition	2019	MFF	OOB	Out of Bounds	2019	3D K2
ACGOTS	Aircraft Carrier: Guardian of the Seas	2016	3D K2	OOBP	Oceans: Our Blue Planet	2018	3D GSF
AfricAdv	African Adventure 3D	2007	3D nWP	Pandas	Pandas	2018	3D IMAX
AGWN	Australia's Great Wild North	2018	K2	Penguins	Penguins 3D	2013	3D nWP
AirRacer	Air Racers 3D: Forces of Flight	2012	3D K2	PlanPowe	Planet Power	2018	3D nWP
AIWC	Adventures in Wild California	2000	MFF	PTJH	Pandas: The Journey Home	2014	3D CPD
AmazAdve	Amazon Adventure	2017	3D SKF	RobotsNG	Robots	2015	3D CPD
AMJ	America's Musical Journey	2018	3D MFF	SeaRex	Sea Rex: Journey to a Prehistoric World	2010	3D 3DED
AMMM	Amazing Mighty Micro Monsters 3D	2016	3D nWP	SFLIS	Search for Life In Space, The	2016	3D MFF
AOTE	Antarctica 3D: On the Edge	2014	3D GSF	SOB3D	Son of Bigfoot 3D, The	2018	3D nWP
Arabia	Arabia	2010	3D MFF	SOE	Story of Earth, The	2018	3D DMD
AsterME	Asteroid: Mission Extreme	2016	3D CPD	SOTU	Secrets of the Universe	2019	3D K2
BackWild	Backyard Wilderness	2018	3D SKF	SpaceNex	Space Next 3D	2015	3D B&D
BFTB	Back From the Brink	2019	3D CPD	SpacJunk	Space Junk	2012	3D K2
Bugs	Bugs!	2003	3D SKF	SupDogs	Superpower Dogs	2019	3D IMAX
ConqOTS	Conquest of the Skies	2017	3D nWP	TA	Tornado Alley	2011	3D GSF
CRA	Coral Reef Adventure	2003	MFF	TinyGian	Tiny Giants 3D	2014	3D GSF
Cuba	Cuba	2019	3D GSF	TOTIA	Titans of the Ice Age	2013	3D GSF
D-Day	D-Day: Normandy 1944	2014	3D K2	TSAB	To Space and Back	2017	3D CPD
DinoAliv	Dinosaurs Alive	2007	3D GSF	TTA	To the Arctic	2012	3D MFF
Dolphins	Dolphins	2000	MFF	TTS	Touch the Stars	2019	3D B&D
DreamBig	Dream Big: Engineering Our World	2017	3D MFF	TurtOdys	Turtle Odyssey	2018	3D SKF
DSC	Deepsea Challenge 3D	2015	3D CPD	TurtTale	Turtle's Tale: Escape from Paradise, A	2013	3D nWP
Everest	Everest	1998	MFF	VanGogh	Van Gogh: Brush with Genius	2009	MFF
ExpChesa	Expedition Chesapeake	2019	B&D	Volcanoes	Volcanoes: The Fires of Creation	2018	3D SKF
ExtrWeat	Extreme Weather	2016	3D CPD	WildAfri	Wild Africa 3D	2015	3D GSF
FlyMons	Flying Monsters 3D	2011	3D CPD	WildCats	Wild Cats 3D	2015	3D nWP
FMTTM	Fly Me to the Moon	2008	3D nWP	WM	Watermelon Magic	2013	3D B&D
FON	Forces of Nature	2004	CPD	WOTA	Wonders of the Arctic	2014	3D GSF
FOTB	Flight of the Butterflies	2012	3D SKF	WTM	We, The Marines	2017	MFF
G3DNW	Galapagos 3D: Nature's Wonderland	2014	3D nWP	WWDPP3D	Walking With Dinosaurs	2014	3D GSF
GBR3D	Great Barrier Reef	2018	3D MFF	Yell	Yellowstone	1994	GSF
GBRF	Great Bear Rainforest	2019	3D MFF				
GC	Grand Canyon: The Hidden Secrets	1985	DCI				
GCA	Grand Canyon Adventure: River at Risk	2008	3D MFF				
GlobSoun	Global Soundscapes	2016	3D FIC				
GWS	Great White Shark	2013	3D GSF				
HCBTD	Hearst Castle: Building the Dream	1996	DCI				
HiddPac	Hidden Pacific	2019	3D GSF				
HidUniv	Hidden Universe	2013	3D MFF				
HOTB	Hurricane on the Bayou	2006	MFF				
HumpbWha	Humpback Whales	2015	3D MFF				
Hurrican	Hurricane	2017	3D nWP				
IncrPred	Incredible Predators	2016	3D GSF				
ISR	In Saturn's Rings	2018	B&D				
Jerusale	Jerusalem	2013	3D CPD				
JMCSO	Jean-Michel Cousteau's Secret Ocean	2015	3D K2				
JTM	Journey to Mecca	2009	CPD				
JTS	Journey to Space	2015	3D K2				
JTTSP	Journey to the South Pacific	2013	3D MFF				
L&C	Lewis & Clark: Great Journey West	2002	CPD				
LITAOA	Living in the Age of Airplanes	2015	CPD				
MA	Museum Alive 3D	2016	3D nWP				
Meerkats	Meerkats 3D	2012	3D CPD				
MOC	Mysteries of China	2016	3D GSF				
MOF	Magic of Flight, The	1997	MFF				
MOTUW	Mysteries of the Unseen World	2013	3D CPD				
MounQues	Mountain Quest	2018	K2				
Mummies	Mummies: Secrets of the Pharaohs	2007	GSF				
ND	Neelkanth Darshan	2005	unk				
Niagara	Niagara: Miracles, Myths, and Magic	1987	DCI				
NPA	National Parks Adventure	2016	3D MFF				

December 2019 Bookings Count

# Film	# Film	# Film	# Film
70 SupDogs	7 FON	4 PlanPowe	1 DSC
57 A11FSE	7 HidUniv	4 PTJH	1 FMTTM
38 DreamBig	7 JTS	4 SFLIS	1 GC
33 Volcanoes	7 TTA	4 SpaceNex	1 HCBTD
32 GBRF	6 ACGOTS	3 AsterME	1 HOTB
29 BackWild	6 AfricAdv	3 Everest	1 IncrPred
28 NPA	6 GlobSoun	3 ISR	1 JMCSO
21 AmazAdve	6 LITAOA	3 SOE	1 JTM
21 ExtrWeat	6 SOTU	3 TinyGian	1 MounQues
21 FOTB	6 TurtTale	3 WildAfri	1 ND
18 AMJ	5 MA	2 DinoAliv	1 OOB
17 Cuba	5 MOC	2 Hurrican	1 Pandas
14 HumpbWha	5 RobotsNG	2 MOF	1 Penguins
13 G3DNW	5 TTS	2 Niagara	1 SeaRex
12 Jerusale	4 AMMM	2 SpacJunk	1 SOB3D
12 MOTUW	4 Bugs	2 TOTIA	1 TA
10 GBR3D	4 Dolphins	2 TSAB	1 VanGogh
10 TurtOdys	4 ExpChesa	2 WWDPP3D	1 WildCats
9 BFTB	4 FlyMons	1 AirRacer	1 WM
9 D-Day	4 GCA	1 AIWC	1 WOTA
9 L&C	4 GWS	1 AOTE	1 WTM
8 HiddPac	4 JTTSP	1 Arabia	1 Yell
8 OOBP	4 Meerkats	1 ConqOTS	
7 AGWN	4 Mummies	1 CRA	

Directory of Organizations Mentioned in this Issue of LF Examiner

Distributors' abbreviations are listed in **bold**.

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Classified Ads

POSITION OPEN

Temporary Program Director, NSF

The Division of Research on Learning in Formal and Informal Settings (DRL), in the Directorate for Education and Human Resources (EHR) announces a nationwide search for temporary Program Directors at the **National Science Foundation**. Applications will be reviewed beginning October 15, 2019.

DRL is seeking a program officer with expertise in research or development of media in Science, Technology, Engineering or Mathematics (STEM) education. This includes but is not limited to expertise in one or more of the following areas: education media (broadcast TV/film/radio/web-based); transmedia production; interactive media; and assessment of STEM learning via media products.

DRL supports innovative research, development, and evaluation of learning and teaching across all science, technology, engineering and mathematics (STEM) disciplines in both formal and informal learning settings, and in any age group. A major goal of DRL research and development awards is to enhance the science of broadening participation in STEM. DRL programs support innovations in theory, methods, measurement, development, and applications in STEM education.

Duties and Responsibilities

Successful candidates will be expected to work collaboratively with staff and other program officers primarily in the Advancing Informal STEM Learning (AISL) program but may work in other DRL programs as appropriate. They will also be expected to work closely with staff across divisions and directorates on cross-cutting programs of importance to the mission of the Agency.

NSF Program Directors have an unparalleled opportunity and responsibility to ensure NSF-funded research and development activities are at the forefront of advancing fundamental knowledge. In support of that, Program Directors are responsible for extensive interaction with academic research communities, formal and informal educational organizations, industry, as well as interaction with other Federal agencies that may lead to development of interagency collaborations. Within this context, Program Directors solicit, receive and review research and education proposals,

make funding recommendations, administer awards and undertake interaction with research communities in these fields. The position requires a commitment to the highest research standards and ethical conduct, a considerable breadth of interest, receptivity to new ideas, a strong sense of fairness, good judgment, and a high degree of personal integrity.

Qualifications

Candidates must have a Ph.D. in a STEM or media related field, plus after award of the degree, six or more years of successful media development, production, research/evaluation administration, and/or managerial experience pertinent to the position; OR a Master's Degree in an appropriate field, plus after award of the degree, eight or more years of successful development, production, research/evaluation administration, and/or managerial experience pertinent to the position.

A successful candidate will have experience in research, production, or distribution of a range of education media and will be knowledgeable about trends and emerging media technologies. The ability to mentor or support researchers and developers in the area and to evaluate proposals and work products is essential. Ideal candidates will have expertise in a STEM discipline or STEM learning. Expertise in quantitative and/or qualitative research methodologies is highly desired.

The position may be filled with one of the following appointment options: *Intergovernmental Personnel Act (IPA) Assignment*: Individuals eligible for an IPA assignment with a Federal agency include employees of State and local government agencies or institutions of higher education, Indian tribal governments, and other eligible organizations in instances where such assignments would be of mutual benefit to the organizations involved. Initial assignments under IPA provisions may be made for a period up to two years, with a possible extension for up to an additional two-year period. The individual remains an employee of the home institution and NSF provides the negotiated funding toward the assignee's salary and benefits. Initial IPA assignments are made for a one-year period and may be extended by mutual agreement. For additional information regarding IPA positions, please visit the NSF website at: <https://www.nsf.gov/careers/rotator/ipa.jsp>

Visiting Scientist, Engineer or Educator (VSEE) Appointment: A VSEE appointment will be made under the Excepted Authority of the NSF Act. Visiting Scientists are on non-paid leave status from their home institution and placed on the NSF payroll as Federal employees. NSF withholds Social Security taxes and pays the home institution's contributions to maintain retirement and fringe benefits (i.e., health benefits and life insurance), either directly to the home institution or to the carrier. Appointments are usually made for one year and may be extended for an additional year by mutual agreement. For additional information regarding VSEE positions, please visit the NSF website at: <https://www.nsf.gov/careers/rotator/vsee.jsp>

Temporary Excepted Service Appointment: Appointment to this position will be made under the Excepted Authority of the NSF Act. Candidates who do not have civil service status or reinstatement eligibility will not obtain civil service status if selected. Candidates currently in the competitive service will be required to waive competitive civil service rights if selected. Usual civil service benefits (retirement, health benefits and life insurance) are applicable for appointments of more than one year. Temporary appointments may not exceed three years.

For additional information on NSF's rotational programs, please see "Programs for Scientists, Engineers, and Educators" on the NSF website at: <https://www.nsf.gov/careers/> and <https://www.nsf.gov/careers/rotator/>

It is NSF policy that NSF personnel employed at or IPAs detailed to NSF are not permitted to participate in foreign government talent recruitment programs. Failure to comply with this NSF policy could result in disciplinary action up to and including removal from Federal Service or termination of an IPA assignment and referral to the Office of Inspector General. <https://www.nsf.gov/careers/Definition-of-Foreign-Talent-HRM.pdf>

Applications will be accepted from U.S. citizens. Recent changes in Federal Appropriations Law require non-citizens to meet certain eligibility criteria to be considered. Therefore, non-citizens must certify eligibility by signing and attaching this Citizenship Affidavit to their application. This also applies to individuals considered for Intergovernmental Personnel Act (IPA) assignments to NSF. Non-citizens who do not provide the affida-

vit at the time of application will not be considered eligible.

How to Apply

Applicants should submit a current curriculum vitae and a statement of interest to dlrrecruit@nsf.gov with "Program Director Position" and this DCL number in the subject line of the email.

Along with your application, please provide responses to the following:

Quality Ranking Factors

Knowledge of and contributions to STEM learning via one of the areas listed above.

Evidence of collaborative work with evaluators, researchers, and designers of learning media products.

Research, analytical, and/or technical writing expertise as evidenced by publications, presentations or other documents.

Ability to interact, on a peer basis, with practitioners, administrators, senior scientific and managerial personnel in governmental agencies, academia, non-profits, and the private sector.

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SHORTS

Jackson Wild seeks eco entries

Jackson Wild is calling for entries for an international film showcase to “raise awareness of the benefits of wildlife to people, the threats wildlife is facing, and the urgent need for action to restore and protect our planet’s natural systems.” Winners will be at a World Wildlife Day event at United Nations headquarters in New York on March 3, 2020, and screened at events around the world, including the Jackson Wild Summit in Austria next fall.

Entries must have been completed after Jan. 1, 2017, and may be submitted in the following categories:

- Science, Innovation, and Exploration
- Issues and Solutions
- People and Wild Species
- Stories of Hope
- Global Voices
- Short
- Micro

Applications are due Jan. 3, 2020, and can be submitted at jacksonwild.org. The organization is also seeking judges for the showcase.

Sneak preview of *Tenet* coming

Director **Christopher Nolan** is reportedly planning to release an extended IMAX prologue to his next project, *Tenet*. If he follows his usual pattern, the preview will be shown before a major release this month, with many observers guessing it will be IMAX screenings of *Star Wars: The Rise of Skywalker*, which opens on Dec. 20.

Since *The Dark Knight* (2008), most of Nolan’s films have been teased with extended previews containing 15/65 footage and released exclusively to IMAX theaters. The first six minutes of that film ran ahead of *I Am Legend* in December 2007. The opening kidnapping sequence of *The Dark Knight Rises* (2012) ran before *Mission Impossible: Ghost Protocol* in December 2011. A special 15/70 trailer for *Interstellar* was made available to museum theaters before its November 2014 opening. And a five-minute trailer for *Dunkirk* (2017) ran ahead of *Rogue One: A Star Wars Story* in December 2016.

Little is known about *Tenet*, other than it is largely being shot on 15/65 film, is officially described as “an action epic evolving from the world of international espionage,” and stars **John David Washington**, **Michael Caine**, **Elizabeth Debicki**, **Kenneth Branagh**, and **Robert Pattinson**.

Man dies at Sydney IMAX site

In late November, a 49-year-old construction worker died at the site of the building that will house the new IMAX theater in Sydney, Australia, when a high-pressure water pipe burst. The Ribbon, a major new hotel and retail structure, is being built on the site of the former **IMAX Theatre Darling Harbour**, by Grocon Pty. Ltd., Australia’s largest construction company.

Police established a crime scene at the location, and a worker’s safety agency has begun an investigation. The Construction, Forestry, Maritime, Mining, and Energy Union criticized Grocon for not doing enough to protect workers from injury.

World’s Biggest Screen Pty. Ltd., the owner of the former and future IMAX theaters, is a tenant of the Ribbon, and is not directly involved in the construction of the building. When the building is completed in October 2020, it will include a new IMAX theater that is expected to reclaim the title of world’s biggest screen, an honor currently held by **IMAX Theatre Melbourne** in Victoria, Australia.

Frozen 2 star tweets Marbles IMAX

One of the stars of Disney’s *Frozen 2* gave a shoutout via Twitter to the **Marbles IMAX** in Raleigh, NC, shortly before the film’s opening in late November. Emmy award-winning actor **Sterling K. Brown**, who plays Lieutenant Destin Mattias in the film, tweeted, “@DisneyFrozen is out Friday! If you’re near @IMAXRaleigh, get your tickets now and hit the concessions - sales directly benefit mission-based programming and play at **Marbles Kids Museum**, a community nonprofit.”

Brown also plays Randall Pearson in NBC’s *This Is Us*, and N’Jobu in *Black Panther*. It is unclear why he highlighted

the Marbles IMAX, although a local TV station pointed out in its coverage that Brown’s *Frozen 2* co-star, **Evan Rachel Wood**, who played Queen Iduna, is a native of Raleigh.

Marbles IMAX is an 18-year old theater with 267 seats and an IMAX digital projection system. It is associated with Marbles Kids Museum, which is dedicated to the “intellectual growth, social and emotional well-being and physical development” of children through play.

Joker returns to IMAX for one week

Warner Bros.’ *Joker*, which has already grossed over \$1 billion worldwide (on a budget of \$60 million) returned to IMAX theaters for one week in early December, after its opening run in October. One of the top performing films of 2019, it is the highest-grossing R-rated film of all time, beating out the two *Deadpool* films.

Starring **Joaquin Phillips** in the title role, *Joker* is a new take on the origin story of the villain from DC Comics’ *Batman* series.

Indy’s hidden *Star Wars* mugs

The IMAX Theater at the **Indiana State Museum** in Indianapolis promoted *Star Wars: The Rise of Skywalker* with a scavenger hunt that sent fans around the city searching for *Star Wars*-themed mugs. Winners kept the mug and also got two free tickets to the movie.

The theater posted photos of one mug each day for nine days on its imaxindy Instagram account with the tag #imaxindymugclub. It was up to fans to identify the location in the picture and find the mug. Those who didn’t find a mug could use the hashtag to post about their attempts, which entered them in a raffle for a tenth mug.

The handmade mugs, which are not available for sale, are the work of an anonymous artist who goes by **Indy_Mugs** on Instagram, and were inspired by characters such as Chewbacca, Kylo Ren, and the robots R2-D2 and BB-8.